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ABSTRACT

This guidebook is designed to help school districts plan evaluations of their curriculum program. It is divided into four major sections. The first section presents a case study based on the experiences of a school district that used this handbook in planning an evaluation. The second section reproduces the set of forms that the school district planning group completed. The third section gives brief instructions for completing the seven forms. The last section offers advice on how to select a technical consultant who can assist in conducting the planned evaluation. Finally, Appendix A contains master copies of the forms to be completed in planning the evaluation; Appendix B offers a set of checklists to be used in completing certain forms. (Author/LD)

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PLANNING A PROGRAM EVALUATION

An Educator's Handbook

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PLANNING A PROGRAM EVALUATION

An Educator's Handbook

by
John J. Bowers

RESEARCH FOR BETTER SCHOOLS, INC.
Robert G. Scanlon, Executive Director
March, 1978

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Introduction

Purpose of the handbook

Planning A Program Evaluation: An Educator's Handbook is designed to help school districts plan their curriculum program evaluations. Use of this handbook places evaluation planning in the hands of those persons in the district who want a program evaluation and who will use its results. When these persons participate in planning, it is more likely that information collected about a program will be more directly relevant to the purposes of its evaluation.

We emphasize that this handbook deals with evaluation planning, not with the details of executing the plan. Conducting the evaluation, once the plan is developed, will probably require technical expertise. This expertise in data collection, analysis, and interpretation is often available from within a district. When it is not, then the planning group must consider the use of outside assistance.

Deciding to use the handbook

There are certain considerations that should be reviewed before deciding to use this handbook. These considerations deal with the purpose of the evaluation, the commitment of staff to the planning effort, time needed to plan the evaluation, and costs.

Purpose of the evaluation. Evaluations are conducted for many purposes. The results of evaluations are used to decide whether a program should be continued, ended, or changed; results are used to inform districts whether goals are being achieved, or whether key program features are being appropriately implemented. Evaluations often are carried out as part of staff development, or to promote the visibility of a program or to comply with evaluation requirements tied to program funding. Critical purposes may be hidden. In any case, the use of this handbook starts with explicit statements about the purposes of the evaluation to be planned.

- Are there clear purposes for planning the evaluation?

Staff commitment. Planning A Program Evaluation is intended for use by a small group of persons within the district who represent both those concerned with the curriculum program being evaluated and those who will use the results. Committee members should be chosen who are able to make the commitment of time and effort which the planning process will require. The committee also should not be too large; too many members make it difficult to schedule meeting times so that all can participate.

One person from the district should be chosen to act as coordinator of the planning group; he has the responsibility for organizing and managing the planning

activities. The coordinator should have good interpersonal skills, credibility with other teachers and administrators, the ability to manage the resources needed to conduct the planning effort, and skills in problem-solving and communication. It helps, too, if the coordinator has some experience or training in research design, test and questionnaire construction, data analysis, and report writing. Ideally, the coordinator of the planning effort should also supervise the conduct of the evaluation.

- Are persons in the district available to serve as committee members?
- Is a committee coordinator available to lead the planning committee?
- Is the district willing to allocate necessary staff time for this effort?

Time Schedule. A definite time schedule is necessary for completing the steps in the planning process. Time should also be scheduled for orienting the planning group in the use of the handbook, and for administrative review of the final evaluation plan. A time schedule will help planning group members to arrange their time and to keep group discussions within definite limits.

The time schedule should specify a date when the final evaluation plan should be completed and when the planning meetings will be held. Some planning groups work through the entire handbook in two or three days, meeting all day each day. Others spread the work over as long as six months, holding three-hour meetings once or twice a month. The shorter process generally costs less. However, it may be difficult for planning group members to find a solid block of time when all are free to participate. The longer process gives planning group members time to think about and review the forms. However, too much time between committee meetings often results in the committee spending too much time in reviewing and recalling previous work.

There are two common ways to schedule the planning process. In the first, the planning group is appointed at the beginning of the school year in order to use the handbook during the fall. During the rest of the school year, the coordinator and a technical consultant pilot test the plan. The full-scale evaluation is then fully implemented with the beginning of the new school year in September. A second way is to plan the evaluation during the spring or over the summer break, and then to implement the evaluation plan with the beginning of the new school year.

- Can a realistic time schedule be developed?

Costs. Costs associated with using the handbook should be considered before deciding whether it should be used. These should include anticipated costs for released time or substitute teachers, secretarial and clerical expenses, and costs for

duplicating forms and committee documents. Costs for the committee members' orientation, training, and planning meetings should also be realistically estimated. Questions to be answered by those responsible for deciding to use the handbook are:

- Have costs in using the handbook been considered?
- Can these costs be underwritten by the school district?

If all the questions listed above can be answered "yes," then it is likely that a district will be able to use this handbook in planning a program evaluation.

The planning process

There are five steps in the planning process. In the first step, the committee clarifies the questions and concerns that led to the decision to plan the program evaluation. In other words, the purpose of the proposed evaluation is stated at this time so that all committee members agree upon a common frame of reference.

The second step taken by the committee is to summarize basic facts about the program to be evaluated. These basic facts refer to the name of the program, the location and grade levels of its pupils, their numbers, it staff, and the name and title of its director.

The third step begins by identifying program elements that are considered by the committee to be relevant to the concerns and questions listed in step one. These program elements are classified into categories reflecting student outcomes, curriculum content, content sequence, instructional approach, and program support. A detailed description of each relevant program element is developed.

Steps four and five build upon step three. In step four, the relative importance of each relevant program element is determined and the most important ones are selected for further attention. In step five, data collection requirements are specified for each retained element, and judgment criteria are developed for interpreting the data to be collected.

Forms are associated with each of these steps. The set of completed forms constitutes the evaluation plan. There are seven forms, titled as follows:

- Form 1 – Clarifying Concerns and Questions
- Form 2 – Summarizing Basic Program Information
- Form 3A – Student Outcomes
- Form 3B – Curriculum Content
- Form 3C – Content Sequencing
- Form 3D – Instructional Approach
- Form 3E – Program Support

Forms 3A through 3E each have three parts. Part 1 helps to clarify the intended program element; Part 2 rates the relative importance of each program element; and Part 3 specifies data collection requirements and judgment criteria for interpreting the data to be collected. Figure 1 illustrates the relationships between the steps and the forms and shows the order in which the forms and their parts are completed.

How many copies of each form are completed depends on the nature and number of concerns and elements. Several program elements may be related to one concern, and one element may be related to several concerns.

Overview of the handbook

There are four major sections that follow in this handbook.

Case Study - Narrative. This section presents a case study based on the experience of a school district which used this handbook in planning an evaluation. This section, and the examples which follow, should be read carefully before any attempt is made to begin the planning process or complete the forms.

Case Study - Examples. This section presents the set of forms which the school district planning group completed.

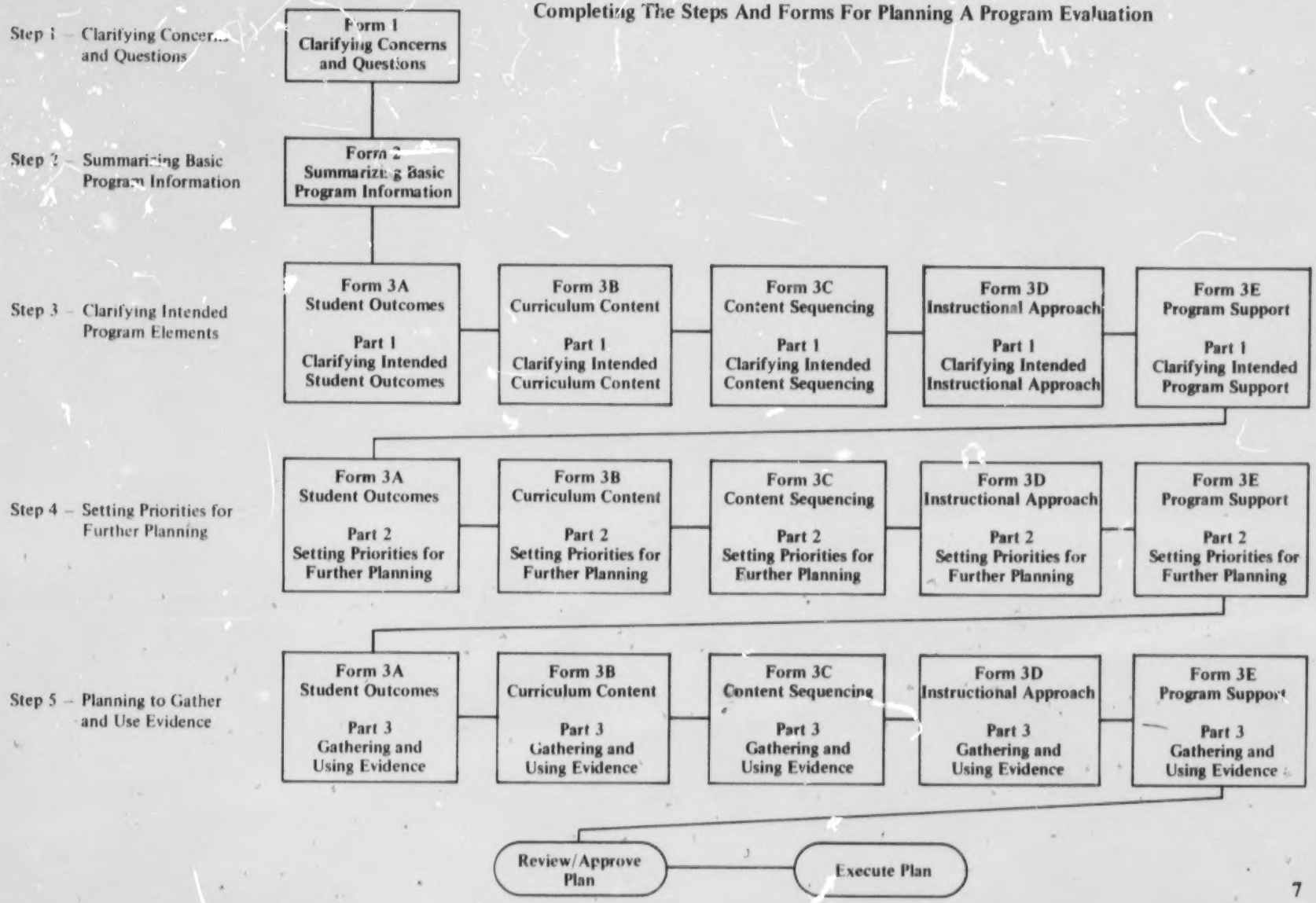
Instructions for Completing Forms. This section presents brief instructions for completing the forms. The instructions are given in the order in which the forms are completed.

Seeking Further Assistance. This brief section presents advice on how to select a technical consultant who can assist in conducting the evaluation which has been planned.

There are also two appendixes. Appendix A contains master copies of the forms to be completed in planning the evaluation. These forms may be copied for use by the planning committee. Appendix B is a set of checklists which will be used in completing forms dealing with curriculum content, content sequencing, instructional approach, and program support.

FIGURE 1

Completing The Steps And Forms For Planning A Program Evaluation


Step 1 – Clarifying Concerns and Questions
Form 1 Clarifying Concerns and Questions
Step 2 – Summarizing Basic Program Information
Form 2 Summarizing Basic Program Information
Step 3 – Clarifying Intended Program Elements
Form 3A Student Outcomes Part 1 Clarifying Intended Student Outcomes
Form 3B Curriculum Content Part 1 Clarifying Intended Curriculum Content
Form 3C Content Sequencing Part 1 Clarifying Intended Content Sequencing
Form 3D Instructional Approach Part 1 Clarifying Intended Instructional Approach
Form 3E Program Support Part 1 Clarifying Intended Program Support
Step 4 – Setting Priorities for Further Planning
Form 3A Student Outcomes Part 2 Setting Priorities for Further Planning
Form 3B Curriculum Content Part 2 Setting Priorities for Further Planning
Form 3C Content Sequencing Part 2 Setting Priorities for Further Planning
Form 3D Instructional Approach Part 2 Setting Priorities for Further Planning
Form 3E Program Support Part 2 Setting Priorities for Further Planning
Step 5 – Planning to Gather and Use Evidence
Form 3A Student Outcomes Part 3 Gathering and Using Evidence
Form 3B Curriculum Content Part 3 Gathering and Using Evidence
Form 3C Content Sequencing Part 3 Gathering and Using Evidence
Form 3D Instructional Approach Part 3 Gathering and Using Evidence
Form 3E Program Support Part 3 Gathering and Using Evidence
Review/Approve Plan
Execute Plan

Case Study - Narrative

Introduction

This case study is based on an actual planning effort conducted during the 1976-77 school year by a district in southeastern Pennsylvania. The names of the town and the people involved have been changed and the names of the curriculum program and the standardized tests are also fictional. Observations were made of all planning meetings over a period of about four months and careful records were kept of their work. In this case study, their actions have been presented in summary form as one continuous effort.

All committee members should read the case study carefully prior to the first meeting. It is useful to hold an orientation meeting to discuss the planning process and the case study, and to confirm practical details such as the schedule of committee meetings.

Situation

As Science Director of the Belford Public Schools, Walt Powell supervised all science instruction in the district. For some time, he had been concerned about the district's ninth grade science program, called the Science Curriculum for Individualization (SCI), and had made a number of modifications to it over the years to fit local needs and policies.

Powell had held discussions with the Assistant Superintendent for Curriculum and had heard complaints from the teachers who were using the program. The chief problems centered on the low level of student achievement; on lack of materials and facilities; and on issues of methods and content. There was consensus that some improvement of the ninth grade SCI program should be undertaken.

Because the discussions had been largely based on impressions and unsystematic observations, Powell decided that before any improvement effort could be undertaken, it would be necessary to evaluate the program and collect reliable data on its actual status.

He selected *Planning A Program Evaluation: An Educator's Handbook* for help in planning the evaluation because he felt it provided a structured, systematic method of planning the evaluation; it presented a way to involve the program's teachers in the planning and later data collection efforts; and would increase the likelihood that they would use the results to improve the program.

He decided to appoint all five full-time teachers who taught in the ninth grade SCI program to the committee. Two part-time teachers in the program were not included. In making his plans, Powell scheduled the planning meetings to take place from September to December, with administrative review and final approval of the

eventual plans in January. This would leave the spring for doing pilot tests of the instruments and for some early data collection. Teacher time would be covered mainly by holding meetings on in-service training days or by using substitute teachers on days when all classes were scheduled for tests. His estimated budget included costs for substitutes and for duplication of forms. Powell submitted his plan to the Assistant Superintendent for Curriculum and it was approved.

Powell informed the teachers of the plan and held a brief orientation meeting for them. He gave them copies of the handbook, reviewed the planning process and meeting schedule with them, and told them to read the entire handbook carefully. He assigned each to come prepared to the first planning meeting with a list of concerns and questions about the program.

Step 1: Clarifying Concerns and Questions on Form 1

At the first meeting, the committee had little trouble arriving at a consolidated list of concerns about the ninth grade SCI program. Powell presented his list first. It included concerns about student cognitive achievement, student attitudes towards science, the district's student grouping policies and their effect on student achievement levels, the lack of proper laboratory materials for demonstrations and student use, and discrepancies between the intended methods and activities of the program and those actually used by teachers.

All five teachers echoed these concerns but added others such as a lack of workbook materials and proper building facilities, lack of student discipline in doing lab work, and confusion on the course's content and the sequence of that content.

They quickly realized that the number of topics was much too long to be handled easily. In their discussion, they tried to combine related or overlapping concerns.

For example, student cognitive achievement and student attitudes were combined under a concern which they titled "student outcomes." Concerns about workbooks, lab materials, and building facilities were all combined under the title of "materials and facilities." Their final list comprised five concerns: (1) student outcomes, (2) student grouping, (3) content and sequence, (4) methods and activities, and (5) materials and facilities. They then began to complete one copy of Form 1 – Clarifying Concerns and Questions for each concern by briefly describing each concern.

Their attempts to summarize the bases for their concerns produced more discussion since some of them had difficulty in identifying precisely why they felt such concerns. In the end, they found that their concerns stemmed from such

diverse sources as informal surveys, observations made by the Science Director, informal discussions among teachers, and simply the logic of the situation. They summarized these diverse sources briefly in Item 2 of Form 1 for each concern.

The five committee members then tried to convert their concerns into more specific questions which could be answered by the evaluation. As coordinator, Powell was immediately faced with two problems. First, the committee was simply suggesting too many questions, far more than the evaluation could possibly answer, and, second, some of the questions were too vague or too detailed, or outside the scope of an evaluation. He reminded the committee that this was their first attempt at conducting an evaluation and that they should try to keep their questions as few and as simple as possible. More complex questions might be answered in later evaluations of the program. He led the committee to simplify some questions and combine others.

Still, there were some disputes among the committee members. Ira Dayton wanted to compare local student performance with the performance of students around the country. This clearly implied using a nationally standardized test. Vic Nolte felt that such tests measure objectives that did not match the local ones set by the teachers. They compromised by asking both questions. Joan Cohen proposed a question regarding sex differences in attitudes towards science, since it was her observation that the students viewed science as a male field. One particular problem arose in the concerns about methods and activities. Originally, the committee wanted only to have teachers report on what methods and activities they used. Powell, however, said that he had often observed classes and that it was his experience that teachers did not always do in the classroom what they thought they were doing. Therefore, he wanted to put in another question to compare what teachers said they did with what an observer actually saw them doing. The committee was at first reluctant to accept this, but after some thought agreed to include it. They summarized their questions in Item 3 of Form 1.

The committee's completed copies of Form 1 are on pages 26 to 30.

Review these now before proceeding to Step 2.

Step 2: Summarizing Basic Program Information on Form 2

Completing Form 2 – Summarizing Basic Program Information was very easy at first. Parts 1 and 2 of the form, which dealt with its title, content, reference books, and staffing were fairly obvious (although not everyone remembered that there were lists of objectives and materials).

Part 3, however, produced the problem of how to report student enrollment. At first, Vic Nolte wanted to list only a general estimate of the number of students, "About seven hundred," he said. Dayton, however, suggested that if they were to give a standardized test, they would have to know how many copies to order and wanted an exact figure. Les Fisher reminded the committee that they wanted to compare students in the SCI program to those in the physics and biology programs, and therefore needed to know how many students were enrolled in them. Joan Cohen also wanted to know how many boys and girls were in each of the three ninth grade science programs. Bill Armstrong thought that it might be useful in interpreting student outcomes to know to what extent white, black, and Spanish-speaking students differed, if at all, on measures of student outcome, and wanted a listing of students by racial/ethnic group.

Walt Powell was able to search his records and provide breakdowns by science program and by sex, but he could only find percentage breakdowns on racial/ethnic composition for the North Junior High School. These breakdowns were entered in Item 7 of Form 2.

The committee's completed copy of Form 2 is on page 31.

Review this now before proceeding to Step 3.

Step 3: Describing Intended Program Elements on Forms 3A to 3E, Part 1

Powell had assembled stacks of blank copies of Forms 3A through 3E so that the members would have sufficient copies to use for describing intended program elements. Powell reminded them that they should not attempt to describe in detail all the elements of the SCI program, only those which they thought were most relevant to their list of concerns and questions.

Powell distributed copies of Form 3A – Student Outcomes. The committee at first considered and then rejected information recall as a type of outcome which was related to their concerns and questions. The program had many such objectives, but the committee believed that information recall was less relevant to their concerns than basic skills and higher order processes such as problem-solving.

They also included attitudes as a relevant student outcome. Some dispute occurred over support skills as a outcome. Ira Dayton felt that it was important and should be included because teachers had complained of discipline problems, and believed this type of outcome was related both to student attitudes and methods and activities. For the moment, the committee agreed to keep it in. The committee completed Part 1 of Form 3A by restating each selected outcome in more specific terms and by writing representative student behaviors associated with each.

Before beginning work on Form 3B – Curriculum Content, Powell suggested that the committee's work would be simplified if they reviewed the checklists in Appendix B before selecting further elements relevant to the evaluation. At first, the committee was confused by Form 3B since, to some extent, the SCI program drew on all these sources of content. Powell thought they should narrow their view a bit and select only those sources and types of content with which they were most concerned. After more discusion, they narrowed their interests to traditional academic disciplines and personal experiences of students. They finished Part 1 of Form 3B by specifying types of content from each of these two sources which they felt the SCI program emphasized. They also gave a brief explanation of their reasons for choosing these sources of content as important for the program evaluation. Les Fisher wondered why they should write their reasons for emphasizing these types of content. Powell explained that written reasons were useful both for explaining the program to a technical consultant who might assist in the execution of the evaluation plan, and for interpreting evaluation results.

Because content sequencing was directly related to the curriculum content, the committee completed one copy of Form 3C – Content Sequencing for each type of content they had listed in Item 1b of Form 3B. They had listed a total of five types of content, so they completed five copies of Form 3C – Content Sequencing. Again,

the committee had the problem of choosing which sequencing principles were emphasized since all of them were used to some extent. Using the checklist in Appendix B-2 helped them to organize their thinking. After some discussion, they agreed that the most important sources of sequencing principles to be evaluated were the logical structure of existing knowledge (facts, key concepts, and rules and relationships) and assumptions about the psychology of learning (methods and procedures and student interest or purposes). They completed Form 3C by specifying content sequencing principles for each type of content and their reasons for emphasizing these principles.

Completing the forms on instructional approaches (Form 3D) provoked the longest discussions of all. Everything on the checklist seemed somehow to be relevant. Thus, they had to make some hard choices about what might be most relevant for their evaluation concerns and questions. The checklist in Appendix B-3 was helpful in comparing alternative approaches and strategies. The committee easily agreed to eliminate learning objectives; the assessment and diagnosis of learning needs were also seen as not particularly relevant to their concerns list. They initially considered placement as relevant to their concern about student grouping, but they rejected this as being more appropriate for a concern about placing students within one course of instruction, not about placing students in either the SCI, physics, or biology programs. They also rejected pacing and performance evaluation as not relevant.

There was some disagreement over whether instructional settings and student and teacher roles were very relevant. Vic Nolte felt that they were really more interested in how students were engaged in the learning process and how teachers and students interacted, and not so much in specific functions which each performed. Les Fisher did not want to include instructional settings since, in practice, there was little variation in settings and he felt it was not particularly relevant to their evaluation. The rest of the committee, however, wanted to retain it, at least long enough for the priority ratings later on.

Because of the large number of approaches and strategies which they had checked, Powell assigned one or two approaches to each committee member and asked that member to write a brief paragraph on the reasons why these strategies should be emphasized in the SCI program. After they were written, the committee read each one and modifications were made as needed.

The last form, Form 3E – Program Support, was fairly easy to complete. The committee picked facilities and student grouping as the only operations relevant to their concerns. They had first thought to include materials management, but Bill Armstrong said that what they were really interested in was the presence or lack of

such materials, not with the system for ordering them or making them accessible. They listed the relevant support system strategies (from Appendix B-4) and the reasons for them.

Powell had the handwritten forms typed up and reproduced for each committee member.

> The committee's completed copies of Forms 3A through 3E are on pages 32 to 52.
>
> Review Part 1 of these forms now before proceeding to Step 4.

Step 4 – Setting Priorities for Further Planning on Forms 3A to 3E, Part 2

The coordinator distributed typed copies of Forms 3A through 3E to each committee member. He instructed them to go through the set and complete Part 2 – Setting Priorities for Further Planning on each form. He asked them to consider how highly related each element was to the list of concerns and questions. While all were considered relevant to some extent, some would be more highly related than others to the list of concerns and questions. The committee had named 21 elements, which was certainly too many to handle in one evaluation; some would have to be eliminated.

Each member of the committee made his or her ratings of each element. When they were finished, Powell led them in examining and discussing their ratings. To speed the process, Powell suggested that any element which received high ratings (either 4 or 5) from all of them be retained with little or no discussion. Elements which received low ratings (1, 2, or 3) from all six would be dropped with little or no discussion. The committee would discuss elements whose ratings were mixed and try to arrive at a consensus.

During the discussion, one item was rated low by all the members. That was the element of facilities under the category of Program Support (Form 3E). Since the last meeting, it had been announced that the ninth grade would be moving into a new building. Consequently, questions on the adequacy of facilities in the present building were not relevant, and since the new building was not yet complete, it was not possible to examine the adequacy of its facilities.

Besides facilities, there were six other elements on which the committee members' ratings disagreed. The first was support skills in the student outcomes category. Everyone but Ira Dayton had rated it 3 or lower. Ira still felt that student

discipline and support skills were important to the evaluation, but other members argued that support skills were not directly related to the concerns about attitudes or student achievement and had not been mentioned explicitly in either. They also felt that the element was relatively less important than the other three elements of basic skills, higher order processes, and student attitudes. Ira agreed to go along with the committee's opinion, and support skills joined facilities in being dropped from further planning.

Under the category of instructional approach, ratings of the importance of student motivation, instructional settings, media, primary roles of student, and primary roles of teachers showed some disagreement. Three persons had rated student motivation low, saying that their real concern was with current student interest in science, not with the motivation techniques teachers use. Student motivation was dropped.

Nearly everyone also judged instructional settings to be irrelevant. On review, they concluded that it was not as highly related as other elements to the concerns and questions, and was dropped.

Two persons had rated instructional media low, believing it not as important as other elements. However, the rest of the committee felt that it was important to know whether proper workbooks and lab equipment were available and whether teachers were using it. The coordinator was particularly interested in seeing it remain, since he felt the evaluation might provide evidence of a need for an increase in budget for such materials. The element of instructional media was kept.

The elements of the primary roles of students and primary roles of teachers were discussed together, since members had tended to rate each element high or low for the same reasons. Those who had rated these two elements low had come around to Vic Nolte's previous point that they were really more interested in methods and activities, and not so much with specific role functions. After considerable discussion on the point, these two elements were dropped.

Thus, fifteen of the original 21 elements were accepted by the committee and the coordinator for further planning. The six that were eliminated were filed away for possible use in future evaluation efforts.

> The committee's completed copies of Forms 3A through 3E are on pages 32 to 52.
>
> Review Part 2 of these forms now before proceeding to Step 4.

Step 5: Specifying Data Sources and Judgment Criteria on Forms 3A to 3E, Part 3

The coordinator told the committee that their task now was to complete Part 3 of Forms 3A through 3E by proposing specific data sources for each of the elements remaining in the planning process and to establish criteria by which such data would be interpreted in relation to the original list of concerns and questions. Before beginning this step, he reviewed with them a list of possible data sources (included in the handbook on page 68). The group was surprised at the possible range of such sources. Most had thought chiefly in terms of tests and questionnaries, and had not considered observation checklists, logs of activities, student records, and other possible sources.

The committee had little trouble suggesting data sources for student outcomes (Form 3A). Previous discussions had already implied both a locally constructed objectives referenced test and a nationally standardized test for basic skills. They felt that this would enable them to compare the performance of their students with that of other students around the country, and also measure their performance on locally important objectives. However, they did not feel confident to construct a test on scientific problem-solving and thus indicated they would use a problem-solving subtest of the standardized test. Initially, however, they wanted to set their measurement criteria very high. They wanted 75 percent of their students to achieve above the 75th percentile. Powell explained to them that such a criterion of performance was completely unrealistic, and that few districts in the country could show this level of student achievement. It was especially unrealistic for the ninth grade SCI classes because the brighter students were tracked into the physics and biology classes. Finally, the committee agreed to set performance standards that matched the national standards; i.e., half their students would score in the top half of the score distribution. They also knew that the standardized test would provide a service which would break down scores by sub-groups such as sex, race, and so on, for still further analysis.

The locally constructed test was another matter, however, since in effect the teachers taught to the test. For this test, three-fourths of the students were to get at least 80% of the items correct.

The committee immediately thought of using questionnaires to collect data about student attitudes towards science. However, they were puzzled about measurement criteria since the questionnaire had not yet actually been constructed. Powell suggested that it would probably include questions with a scaled response that ranged from "very interesting" to "very uninteresting." Therefore, some central scale point might be set as "minimum acceptable performance." This would be

subject to change, of course, depending on the actual instrument which the technical consultant would help construct, but for the moment it would suffice as a desired standard.

Because Forms 3B and 3C, on content and content sequencing, were so closely related, they decided to deal with them together. They had great difficulty in thinking of possible data sources which would give them information about the content and sequence actually used in the classroom. A teacher questionnaire was suggested, but some members felt that it would not be sufficient alone, since it would only record a teacher's impressions of the content and sequence he or she used. Vic Nolte then suggested that teachers keep a log, at least for a few weeks each semester, so they could record on a day-to-day basis what content and sequence they taught. Walt Powell felt that some kind of check by an outside observer would also be helpful in order to compare what teachers reported they did with what they were observed doing by another person. He suggested that it would be possible to devise an observation checklist, like one he used in observing the classes of new teachers. He would observe a random sample of classes taught over a period of months and compare his results with those from the questionnaires and logs. Such observations would be only for content taught, not sequence, since it would be difficult with a random sample of classes to determine any one teacher's content sequence. The teachers felt, however, that such information should not be gathered without an opportunity to express their reasons for using different sources and sequences of content. Thus, teacher conferences were added to the list of possible data sources.

The elements under instructional approach (Form 3D) allowed them more freedom and imagination in data sources. For instructional sequence, they again suggested teacher logs and conferences, but also included student work samples. These work samples, properly dated, would give evidence of the order in which topics were taught to the students. For instructional media, the coordinator said he would devise a materials checklist based on the one included in the program manuals and would personally take a precise inventory of the stock of lab equipment available. Items would be added to the teacher questionnaire regarding their experiences and impressions of the availability of such materials. Items would also be added to the teacher and student questionnaires, and to the observation checklist about the extent of instructional activities.

Student grouping was the only element the committee had retained under program support (Form 3E). For this, the most obvious source of data was the existing student records, since they were the original source for such information in placing students in SCI, physics, or biology. These records would provide aptitude

test scores, reading scores, grade point averages in science, and other information. The committee realized that it was not practical to examine over a thousand student records; they instead agreed to sample the records of each of the three science groups.

Tables would then show the averages and relative ranges of aptitude and achievement scores for the three science groups. This evidence would support or not the committee members' contention that the SCI students had generally lower levels of ability and achievement than students in the biology and physics.

Walt Powell reviewed the completed forms with the committee, and had the final copies types, duplicated, and distributed.

The committee's completed copies of Forms 3A through 3E are on pages 32 to 52.

Review Part 3 of these forms now before proceeding the next section on putting the plan into operation.

Putting the Plan into Operation

After having the copies of the forms duplicated, the coordinator submitted them to the Assistant Superintendent for Curriculum who reviewed them, suggested a few minor changes, and approved them.

Powell then sought someone with the technical skills in evaluation to help him put the plan into operation. He found an evaluator with appropriate skills who had previously done evaluation work for the district, and signed a contract with him for consultant services.

Together they began to construct instruments for the evaluation. These included the teachers' log, the teachers' questionnaire, the classroom observation instrument, the student questionnaire, and the materials checklist. The committee members, with the evaluator's help, constructed the basic skills test. The evaluator also helped devise a procedure for drawing a sample of the students' records and for tallying the data. This data collection was the first completed by the committee, and they found a very large difference between the ninth grade SCI students and the other science students in both ability and achievement.

During the spring of 1977, instruments were pilot tested. These pilot tests were done to be sure that instructions for the instruments were clear and that the instruments were workable. Since this was a tryout, only a small sample of the students were administered the basic skills test and the student questionnaire.

The evaluator and the coordinator together made up a schedule for administering the data gathering instruments in the next school year.

The evaluator also helped to obtain computer processing for the results of the basic skills test and the student questionnaire. The coordinator had wanted to do this data processing on the district's computer service, but the service's programs were limited to administrative functions such as budgeting and attendance. They did not have the statistical programs needed. The evaluator had the data analyzed at the local university's computer facilities.

As of this writing, the evaluation is in progress and is proceeding on schedule.

Case Study - Examples

These examples are intended to accompany the narrative portion of the case study. They have been placed together for easy reference. The set of completed forms constitutes the evaluation plan for the Science Curriculum for Individualization (SCI) in the Belford, Pennsylvania, school district. On some copies of Forms 3A through 3E, Part 3 has not been completed; these were the program elements which the committee dropped as a result of its priority rankings in Part 2 for the forms. The committee coordinator's ratings are shown in Part 2 of forms 3A through 3E; other committee members could, of course, have given different ratings.

PLANNING A PROGRAM EVALUATION

Form 1 - Clarifying Concerns and Questions

1. **Concern.**

Student performance. There is a concern that ninth grade students are not achieving objectives of the Science Curriculum for Individualization (SCI) program with respect to basic knowledge and skills, and problem solving. In addition to cognitive outcomes, the program intends to produce positive attitudes towards science and science study in students, and there is concern that many students have negative attitudes towards science.

2. **Basis for this concern.**

Teachers have reported that many of their students seem to be performing poorly on a number of the SCI modules and have poor attitudes in science. The district's Science Director is also concerned that parents feel that students are not achieving well in science. Additionally, a survey conducted last year by one of the high schools' psychology classes showed science to be the least liked subject among ninth graders.

3. **Possible questions associated with this concern.**

a. What are the current levels of performance of ninth grade SCI students with respect to the program's objectives in basic skills and problem solving?

b. What is the relative performance of these students on these skills compared to similar students around the country?

c. What are current student attitudes towards science as a school subject, as having relevance to their lives, and as a career field which is open to both males and females?

PLANNING A PROGRAM EVALUATION

Form 1 - Clarifying Concerns and Questions

1. **Concern.**

Student grouping. There is a concern regarding the effects of the student grouping policy for the ninth grade science program. Under current policy, all seventh and eighth grade students take the SCI program. However, ninth grade students are placed into one of three science programs: SCI, biology, or introductory physics. This grouping is made on the basis of combined Verbal and Numerical subtest scores on the Standard Aptitude Test (given in the eighth grade); eighth grade science grades; and various other factors, including student and parent preference. Students with high scores and grades go into either the biology or the physics course. The remaining students, about two-thirds of the total number of ninth grade students, are placed into the SCI program.

2. **Basis for this concern.**

It would seem logical that students in the biology and physics classes are brighter, more highly motivated, and more highly disciplined than those students in the ninth grade SCI program. Removing them from the SCI classes would leave a group of students of middle to lower ability, who are less motivated and less well disciplined. The proportion of students with discipline or study problems would rise in the SCI classes. Informally, teachers in the SCI classes report that this, in fact, seems to be the case. Direct evidence of the exact nature of the differences in the three groups is lacking, however.

3. **Possible questions associated with this concern.**

a. What is the exact nature of the differences in ability and achievement between the ninth grade SCI, physics, and biology classes?

PLANNING A PROGRAM EVALUATION

Form 1 - Clarifying Concerns and Questions

1. **Concern.**

Content and sequence. There is a concern as to the nature of the content actually taught in SCI classes and the sequence in which that content is taught. The content of the ninth grade SCI program is presented in six modules (also called units). All students must take the "measurement" module first since it presents certain basic procedures regarding observation and measurement crucial to the remaining modules. However, an individual student may elect to complete the remaining five in any order of his or her choosing according to his or her interests. Local teachers have modified the original program to require that each student must complete at least three of the five remaining modules in order to pass the course. Although the order of the modules is flexible, the content within a specific module is intended to be taught in a specific sequence.

2. **Basis for this concern.**

Teachers, in informal discussion, have found that they do sometimes teach units in a specified order but do not always teach the content within the modules in the specified order. Some teachers also report omitting some content and adding other content. Both the Science Director and the ninth grade science teachers are concerned about this since they feel that there should be a more well-defined curriculum and since it makes it difficult to talk about all students receiving a reasonably uniform curriculum with such variation.

3. **Possible questions associated with this concern.**

a. What content do teachers actually teach in the ninth grade SCI classes?

b. In what order is that content taught?

c. Why do teachers use a particular content or sequence?

PLANNING A PROGRAM EVALUATION

Form 1 - Clarifying Concerns and Questions

1. **Concern.**

Methods and activities. There is a concern as to whether teachers and students perform essential methods and activities prescribed for the ninth grade SCI program. Specific activities and methods are prescribed by the program manuals, workbooks, etc. In addition, it is not known precisely what other methods are being used by teachers and students and to what extent these are being used.

2. **Basis for this concern.**

The Science Director is concerned about this, partly because teachers seem to be confused as to exactly what methods and activities are to be used, and partly because some of the teachers currently using SCI in the ninth grade have had little or no formal training in using the program. Teachers have also expressed some uncertainties in using the program.

3. **Possible questions associated with this concern.**

a. To what extent do students and teachers follow prescribed methods and activities in the classroom?

b. What methods or activities are omitted or added, and why?

c. What do teachers see themselves as doing, and what do they actually do, as seen by an outside observer?

1. **Concern.**

Materials and facilities. There is a concern about the availability of materials and facilities needed to teach the SCI properly. The SCI program was developed by a research center at a southern university and has a long, well-defined list of laboratory materials which are intended to be used in teaching the content of the program. Certain facilities are also specified or implied such as gas jets for lab work or windows for wintertime experiments. The SCI program also has a series of consumable student workbooks in which students work certain problems and record data from experiments and demonstrations.

2. **Basis for this concern.**

Teachers have complained at various times about a lack of appropriate materials and facilities. Workbooks are often not available and science equipment is in either short supply or not available at all. Some facilities are known not to be available. It is not known exactly to what extent teachers have encountered such shortages, or exactly what the extent of the shortages are.

3. **Possible questions associated with this concern.**

a. Precisely to what extent are materials and facilities available or not available?

b. Are teacher perceptions of the lack of facilities and materials supported by an objective survey of those actually available?

c. If there is an actual lack of facilities and materials, what effects do teachers report that such shortages have on classroom instruction?

Part 1 - Identification

1. **Program title.**

   Science Curriculum for Individualization (SCI)

2. **Content.**

   The program presents a series of science topics (e.g., measurement, the environment, the universe, biology, etc.) for seventh, eighth, and ninth grades. Only the ninth grade program is the subject of this evaluation, however.

3. **Sources and references on the program.**

   Student text booklets: The Environment, The Universe, Measurement, Biological Science, Force and Motion, and Physical Science
   Student workbooks to accompany each of the six text booklets. These workbooks are consumable and are not reused.
   Teachers Manual which gives more information on how to teach specific points, do demonstrations and experiments, etc.
   Objectives List listing all objectives for the entire SCI program
   Materials List listing all materials needed for demonstration and experiments

Part 2 - Personnel

4. **Program Director.**

   Walt Powell, Science Director, Belford Public Schools, PA

5. **Staffing.**

   The staff who currently teach the ninth grade SCI program are:

   Ira Dayton
   Joan Cohen
   Bill Armstrong
   Vic Nolte
   Les Fisher
   Ed Tompkins
   Gloria Cummings

   The first five teachers listed teach ninth grade SCI classes only.
   The last two teachers are full-time teachers but teach other science courses for part of their time.

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Part 3 - Students

6. **Locations at which program is used.**

   Ninth grade SCI is taught at only one location, North Junior High School, Ellis Drive, Belford, Pennsylvania. This school contains only ninth grade students.

7. **Student population associated with program.**

   Ninth grade students are placed in one of three science courses: physics, biology, or SCI. Following is a breakdown of the enrollments in these courses:

	Boys	Girls	Total
SCI	377	326	703
Biology	103	114	217
Physics	87	76	163
Total	567	516	1083

   Approximately 65% of the students at North Junior High School are white, 15% black, and 10% of Spanish speaking backgrounds.

   Belford is a small older town, that has now become a somewhat removed suburb of a large urban city. It includes a central town area, originally of Civil War era and now somewhat run down; better quality suburban homes, and large areas of farmland. In recent years, there has been a large influx of blacks and Spanish-speaking families.

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PLANNING A PROGRAM EVALUATION

Form 3A - Student Outcomes

Part 1 - Clarifying Intended Student Outcomes

1a. **Type of outcome.** Check one and complete item 1b.

- ☐ A. Information recall
- ☒ B. Basic skills
- ☐ C. Higher order processes
- ☐ D. Support skills
- ☐ E. Attitudes
- ☐ F. Values
- ☐ G. Personal development
- ☐ H. Social development

1b. **Specifically, students should...**

Be able to perform basic scientific operations.

2. **Student behaviors.** What are some representative behaviors for this type of outcome?

a. Make accurate measurements with appropriate scales.
b. Make objective observations.
c. Make accurate records/descriptions of these observations.
d. Analyze and interpret quantitative data.
e. Organize a data collection procedure.

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other types of outcomes and student behaviors that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related . . . . . Write the number in this box: [5]

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PLANNING A PROGRAM EVALUATION

Part 3 - Gathering and Using Evidence

4. **Source of data.** What source of data will provide evidence about this outcome?

There will be two sources of data for this performance...
a. Standard Science Achievement Test (Quantitative Skills Subtest).
b. Locally constructed achievement test (Measurement and Observation Subtest).

5. **Measurement criterion.** What is the minimum acceptable performance for an individual student?

a. Student scores at or above 50th percentile of the SSAT-Quantitative Skills Subtest.
b. Student scores 80% of items correct on Measurement and Observation Subtest.

6. **Students expected to meet standard.** How many students in our population are expected to meet this standard?

a. At least half (352 students) should achieve scores at or above the 50th percentile on the SSAT-Quantitative Skills Subtest.
b. At least three-fourths (527 students) should get 80% of the items correct on the locally constructed Measurement and Observation Subtest.

7. **Population characteristics.** What characteristics of this population are useful to know in interpreting their performance?

Average to below average range of ability and achievement. Most high achieving students are in biology or beginning physics in the ninth grade. One-fourth of students in this course are of Spanish-speaking background. Remainder are of mostly white, middle-income families, some blue-collar, some farming, some white-collar families.

PLANNING A PROGRAM EVALUATION

Form 3A - Student Outcomes

Part 1 - Clarifying Intended Student Outcomes

1a. **Type of outcome.** Check one and complete Item 1b.

- ☐ A. Information recall
- ☐ B. Basic skills
- ☒ C. Higher order processes
- ☐ D. Support skills
- ☐ E. Attitudes
- ☐ F. Values
- ☐ G. Personal development
- ☐ H. Social development

1b. **Specifically, students should...**

Be able to solve science problems using basic scientific operations.

2. **Student behaviors.** What are some representative behaviors for this type of outcome?

a. Solve word problems involving measurement, observation, data analysis and interpretation, and organization of data collection procedures.
b. Use scientific procedures to solve problems related to practical incidents they might encounter in their everyday life.

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other types of outcomes and student behaviors that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related . . . . . [5] Write the number in this box

PLANNING A PROGRAM EVALUATION

Form 3A - Student Outcomes (Continued)

Part 3 - Gathering and Using Evidence

4. **Source of data.** What source of data will provide evidence about this outcome?

Standard Science Achievement Test (Problem Solving Subtest).

5. **Measurement criterion.** What is the minimum acceptable performance for an individual student?

Student scores at or above the 50th percentile.

6. **Students expected to meet standard.** How many students in our population are expected to meet this standard?

At least half (352 students) should achieve scores at or above the 50th percentile.

7. **Population characteristics.** What characteristics of this population are useful to know in interpreting their performance?

Teachers report evidence from their classroom observations that many students cannot solve problems readily, either word problems or practical problems.

PLANNING A PROGRAM EVALUATION

Form 3A - Student Outcomes

Part 1 - Clarifying Intended Student Outcomes

1a. **Type of outcome.** Check one and complete Item 1b.

- ☐ A. Information recall
- ☐ B. Basic skills
- ☐ C. Higher order processes
- ☒ D. Support skills
- ☐ E. Attitudes
- ☐ F. Values
- ☐ G. Personal development
- ☐ H. Social development

1b. **Specifically, students should...**

Conduct themselves properly in lab sessions.

2. **Student behaviors.** What are some representative behaviors for this type of outcome?

a. Will use lab science equipment properly.
b. Will follow safety and discipline rules.

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other types of outcomes and student behaviors that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related . . . . . 3 Write the number in this box

PLANNING A PROGRAM EVALUATION

Form 3A - Student Outcomes (Continued)

Part 3 - Gathering and Using Evidence

4. **Source of data.** What source of data will provide evidence about this outcome?

5. **Measurement criterion.** What is the minimum acceptable performance for an individual student?

6. **Students expected to meet standard.** How many students in our population are expected to meet this standard?

7. **Population characteristics.** What characteristics of this population are useful to know in interpreting their performance?

PLANNING A PROGRAM EVALUATION

Form 3A - Student Outcomes

Part 1 - Clarifying Intended Student Outcomes

1a. **Type of outcome.** Check one and complete Item 1b.

- ☐ A. Information recall
- ☐ B. Basic skills
- ☐ C. Higher order processes
- ☐ D. Support skills
- ☒ E. Attitudes
- ☐ F. Values
- ☐ G. Personal development
- ☐ H. Social development

1b. **Specifically, students should...**

Have a positive attitude towards the study of science.

2. **Student behaviors.** What are some representative behaviors for this type of outcome?

a. Find the study of science interesting.
b. Feel that science is relevant to society and their daily lives.
c. Feel that science offers careers at which both males and females can succeed.

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other types of outcomes and student behaviors that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related . . . . . Write the number in this box [4]

Part 3 - Gathering and Using Evidence

4. **Source of data.** What source of data will provide evidence about this outcome?

Student Attitude Questionnaire (to be constructed).

5. **Measurement criterion.** What is the minimum acceptable performance for an individual student?

a. Student rates science as "interesting" on a scaled questionnaire item.
b. Student rates science as "relevant" on a scaled questionnaire item.
c. Student shows no sex bias in response to item regarding males and females choosing careers in science.

6. **Students expected to meet standard.** How many students in our population are expected to meet this standard?

a. All students should rate science as "interesting" or better.
b. All students should rate science as "relevant" or better.
c. All students should display no sex bias regarding science careers for males and females.

7. **Population characteristics.** What characteristics of this population are useful to know in interpreting their performance?

Many students seem to have poor attitudes towards science or are at least indifferent to it. Both boys and girls seem to regard science as a male field.

Part 1 - Clarifying Intended Curriculum Content

1a. **Source of content.** Check one and complete Item 1b.

- ☒ A. Traditional academic disciplines
- ☐ B. Personal experiences of students
- ☐ C. Society as an environment
- ☐ D. The world of thought

1b. **Types of content.** More specifically, within this subject matter area, what types of content is it intended that the present curriculum program emphasize? (See Appendix B-1 for some possibilities within each area.)

2. Facts
3. Key concepts
4. Rules and relationships
5. Methods and procedures

2. **Reasons.** Why should these types of content be emphasized?

Skills in science require that content be emphasized which teaches basic scientific facts; key scientific concepts by which those facts are explained and organized; the rules and relationships among concepts; and the methods and procedures which are included in the "scientific method."

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. . . . . Write the number in this box: [5]

Part 3 - Gathering and Using Evidence

4. **Sources of data.** What sources of data will provide evidence about whether these types of content are actually emphasized in the present program?

a. Teacher Questionnaire - Teachers report what types of content they emphasize.
b. Teacher Log - Teachers maintain a log of types of content actually taught.
c. Observation Checklist - Science Director observes and reports on content actually taught in random sample of classes.
d. Teacher conferences to discuss sources and types of content actually taught.

5. **Judgment criteria.** How will the data collected be judged or interpreted with respect to our list of concerns and questions?

All teachers should give primary emphasis to these types of content as demonstrated by (1) time devoted to them, and (2) stated commitment to them. Teachers will be further asked to interpret reasons for differences in time devoted to each of these types of content, and what content they feel should be emphasized, in a teacher conference.

PLANNING A PROGRAM EVALUATION

Form 3B - Curriculum Content

Part 1 - Clarifying Intended Curriculum Content

1a. **Source of content.** Check one and complete Item 1b.

- ☐ A. Traditional academic disciplines
- ☒ B. Personal experiences of students
- ☐ C. Society as an environment
- ☐ D. The world of thought

1b. **Types of content.** More specifically, within this subject matter area, what types of content is it intended that the present curriculum program emphasize? (See Appendix B-1 for some possibilities within each area.)

Student interests or purposes.

2. **Reasons.** Why should these types of content be emphasized?

It is important to develop positive student attitudes about science. By encouraging students to pursue their own interests within the curriculum program, students may have a more positive attitude towards the study of science and be able to relate it more to their own lives and potential careers.

PLANNING A PROGRAM EVALUATION

Form 3B - Curriculum Content (Continued)

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. . . . . [5] Write the number in this box

Part 3 - Gathering and Using Evidence

4. **Sources of data.** What sources of data will provide evidence about whether these types of content are actually emphasized in the present program?

a. Teacher Questionnaire - Teachers report to what extent content chosen was based on expressed student interests, and what methods are used to stimulate student interest.
b. Teacher Log - Teachers maintain log of types of content actually taught and to what extent it was based on expressed student interests.
c. Observation Checklist - Science Director observes and reports on content actually taught in random sample of classes.
d. Teacher conferences to discuss sources and types of content actually taught.

5. **Judgment criteria.** How will the data collected be judged or interpreted with respect to our list of concerns and questions?

All teachers should give strong emphasis to stimulating interest in science and to using these interests to improve student attitudes towards science. This could be demonstrated (1) the ways in which teachers stimulate interest, and (2) the extent to which such interests influence choice of content. Teachers will be asked in conference discussions to interpret reasons for differences in their approach, how to stimulate interest, and the extent to which such interests should and does influence content choice.

PLANNING A PROGRAM EVALUATION

Form 3C - Content Sequencing

Part 1 - Clarifying Intended Content Sequencing

1a **Type of content** (from Item 1b on Form 3B).

Facts

1b. **Source of content sequencing principles.** The intended source for this type of content. Check one and complete Item 1c.

- ☐ A. Experience or observation of the world
- ■ B. Logical structure of existing knowledge
- ☐ C. Methods of intellectual inquiry
- ☐ D. Assumptions about the psychology of learning
- ☐ E. Conditions under which knowledge could be used.

1c. **Content sequencing principles.** More specifically, for this type of content and for this source, what sequencing principles is it intended that the present curriculum program emphasize? (See Appendix B-2 for some possibilities within each source.)

4. Concrete to abstract

2. **Reasons.** Why should these principles be emphasized?

Scientific facts can be illustrated by moving from concrete examples from a student's experience to more abstract facts which can not be so easily illustrated.

PLANNING A PROGRAM EVALUATION

Form 3C - Content Sequencing (Continued)

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. 4

Write the number in this box

Part 3 - Gathering and Using Evidence

4. **Sources of data.** What sources of data will provide evidence about whether these content sequencing principles are actually emphasized in the present program?

Teacher conferences to discuss types of content and sequence in which content is presented.

5. **Judgment criteria.** How will the data collected be judged or interpreted with respect to our list of concerns and questions?

Teachers, in the conference discussion, will discuss these examples, provide further data on their actual practices, and the reasons for these practices. Interpretations will be made at that time regarding whether the presentation of facts in the science course is, for the most part, made in this way, and what alternative methods might be used.

PLANNING A PROGRAM EVALUATION

Form 3C - Content Sequencing

Part 1 - Clarifying Intended Content Sequencing

1a. **Type of content** (from Item 1b on Form 3B).

Key concepts

1b. **Source of content sequencing principles.** The intended source for this type of content. Check one and complete Item 1c.

- ☐ A. Experience or observation of the world
- ☒ B. Logical structure of existing knowledge
- ☐ C. Methods of intellectual inquiry
- ☐ D. Assumptions about the psychology of learning
- ☐ E. Conditions under which knowledge could be used.

1c. **Content sequencing principles.** More specifically, for this type of content and for this source, what sequencing principles is it intended that the present curriculum program emphasize? (See Appendix B-2 for some possibilities within each source.)

7. Prerequisite order of concepts

2. **Reasons.** Why should these principles be emphasized?

Mastery of scientific knowledge involves a hierarchy of interrelated learning objectives. Certain concepts in science are prerequisite to the learning of other concepts.

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PLANNING A PROGRAM EVALUATION

Form 3C - Content Sequencing (Continued)

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. 5

Write the number in this box

Part 3 - Gathering and Using Evidence

4. **Sources of data.** What sources of data will provide evidence about whether these content sequencing principles are actually emphasized in the present program?

Teacher conferences to discuss types of content and sequence in which content is presented.

5. **Judgment criteria.** How will the data collected be judged or interpreted with respect to our list of concerns and questions?

Teachers, in the conference discussions, will discuss ways in which they sequence this type of content, provide further data on their actual practices, and the reasons for these practices. Interpretation will be made at that time, regarding whether the presentation of key concepts in the science course is, for the most part, made in this way, and what alternative methods might be used.

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PLANNING A PROGRAM EVALUATION

Form 3C - Content Sequencing

Part 1 - Clarifying Intended Content Sequencing

1a. **Type of content** (from Item 1b on Form 3B).

Rules and relationships

1b. **Source of content sequencing principles.** The intended source for this type of content. Check one and complete Item 1c.

- ☐ A. Experience or observation of the world
- ☒ B. Logical structure of existing knowledge
- ☐ C. Methods of intellectual inquiry
- ☐ D. Assumptions about the psychology of learning
- ☐ E. Conditions under which knowledge could be used.

1c. **Content sequencing principles.** More specifically, for this type of content and for this source, what sequencing principles is it intended that the present curriculum program emphasize? (See Appendix B-2 for some possibilities within each source.)

6. Rule to application of rule

2. **Reasons.** Why should these principles be emphasized?

Rules are traditionally taught before the application of rules.

PLANNING A PROGRAM EVALUATION

Form 3C - Content Sequencing (Continued)

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. 5

Write the number in this box

Part 3 - Gathering and Using Evidence

4. **Sources of data.** What sources of data will provide evidence about whether these content sequencing principles are actually emphasized in the present program?

Teacher conferences to discuss types of content and sequence in which content is presented.

5. **Judgment criteria.** How will the data collected be judged or interpreted with respect to our list of concerns and questions?

Teachers, in the conference discussion, will discuss ways in which they sequence this type of content, provide further data on their actual practices, and the reasons for these practices. Interpretation will be made at that time, regarding whether the presentation of rules and relationships in the science course is, for the most part, made in this way, and what alternative methods might be used.

PLANNING A PROGRAM EVALUATION

Form 3C - Content Sequencing

Part 1 - Clarifying Intended Content Sequencing

1a. **Type of content** (from Item 1b on Form 3B).

Methods and procedures

1b. **Source of content sequencing principles.** The intended source for this type of content. Check one and complete Item 1c.

- ☐ A. Experience or observation of the world
- ☐ B. Logical structure of existing knowledge
- ☐ C. Methods of intellectual inquiry
- ☒ D. Assumptions about the psychology of learning
- ☐ E. Conditions under which knowledge could be used.

1c. **Content sequencing principles.** More specifically, for this type of content and for this source, what sequencing principles is it intended that the present curriculum program emphasize? (See Appendix B-2 for some possibilities within each source.)

1. Prerequisite order of skills

2. **Reasons.** Why should these principles be emphasized?

Mastery of the process known as the "scientific method" involves a hierarchy of learning objectives. Certain skills in using the scientific method are prerequisite to the learning of other skills.

5.

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. . . . . [5]

Write the number in this box

Part 3 - Gathering and Using Evidence

4. **Sources of data.** What sources of data will provide evidence about whether these content sequencing principles are actually emphasized in the present program?

Teacher conferences to discuss types of content and sequence in which content is presented.

5. **Judgment criteria.** How will the data collected be judged or interpreted with respect to our list of concerns and questions?

Teachers, in the conference discussion, will discuss ways in which they sequence this type of content, provide further data on their actual practices, and the reasons for these practices. Interpretations will be made at that time, regarding whether the presentation of methods and procedures in the science course, is for the most part, made in this way, and what alternative methods might be used.

5.

PLANNING A PROGRAM EVALUATION

Form 3C - Content Sequencing

Part 1 - Clarifying Intended Content Sequencing

1a. **Type of content** (from Item 1b on Form 3B)

Student interests or purposes

1b. **Source of content sequencing principles.** The intended source for this type of content. Check one and complete Item 1c.

- ☐ A. Experience or observation of the world
- ☐ B. Logical structure of existing knowledge
- ☐ C. Methods of intellectual inquiry
- ☒ D. Assumptions about the psychology of learning
- ☐ E. Conditions under which knowledge could be used.

1c. **Content sequencing principles.** More specifically, for this type of content and for this source, what sequencing principles is it intended that the present curriculum program emphasize? (See Appendix B-2 for some possibilities within each source.)

4. More interesting to less interesting

2. **Reasons.** Why should these principles be emphasized?

By emphasizing content which possesses greater interest for students or more relevance for their purposes should help to overcome student indifference and foster positive attitudes toward the study of science. By letting students study more interesting topic areas first, it may be possible to generate interest in other topic areas.

PLANNING A PROGRAM EVALUATION

Form 3C - Content Sequencing (Continued)

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. . . . . [5] Write the number in this box

Part 3 - Gathering and Using Evidence

4. **Sources of data.** What sources of data will provide evidence about whether these content sequencing principles are actually emphasized in the present program?

Teacher conferences to discuss sources and types of content and sequence in which content is presented.

5. **Judgment criteria.** How will the data collected be judged or interpreted with respect to our list of concerns and questions?

Teachers, in the conference discussion, will discuss ways in which they utilize student interest and purposes in sequencing content and its use as a source of content. Interpretations will be made at that time, regarding whether student interests and purposes are utilized, to what extent teachers feel they should be utilized, and what alternative methods of involving students might be used.

PLANNING A PROGRAM EVALUATION

Form 3D - Instructional Approach

Part 1 - Clarifying Intended Instructional Approach

1a. **Instructional approach.** Check one and complete item 1b.

- ☐ A. Learning objectives
- ☐ B. Assessment of learning needs
- ☐ C. Diagnosis of learning needs
- ☐ D. Placement
- ☒ E. Student motivation
- ☐ F. Instructional sequence
- ☐ G. Pacing.
- ☐ H. Instructional methods
- ☐ I. Instructional settings
- ☐ J. Instructional media
- ☐ K. Primary roles of student
- ☐ L. Primary roles of teacher
- ☐ M. Instructional activities
- ☐ N. Performance evaluation

1b. **Specific instructional strategies.** More specifically, within this instructional approach, what strategies is it intended that the present curriculum program emphasize? (See Appendix B-3 for some possibilities within each approach.)

3. Based on student's interests
8. Based on increased student freedom of choice

2. **Reasons.** Why should these instructional strategies be emphasized?

Students are more likely to want to learn when instruction taps their existing interests. Students are also more likely to want to learn when they have some freedom of choice in what they study and thus are more able to control their learning environment in order to pursue content which fits their interests and purposes.

PLANNING A PROGRAM EVALUATION

Form 3D - Instructional Approach (Continued)

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. 2

Write the number in this box

Part 3 - Gathering and Using Evidence

4. **Sources of data.** What sources of data will provide evidence about whether these instructional strategies are actually emphasized in the present program?

5. **Judgment criteria.** How will the data collected by judged or interpreted with respect to our list of concerns and questions?

PLANNING A PROGRAM EVALUATION

Form 3D - Instructional Approach

Part 1 - Clarifying Intended Instructional Approach

1a. **Instructional approach.** Check one and complete item 1b.

- ☐ A. Learning objectives
- ☐ B. Assessment of learning needs
- ☐ C. Diagnosis of learning needs
- ☐ D. Placement
- ☐ E. Student motivation
- ☒ F. Instructional sequence
- ☐ G. Pacing
- ☐ H. Instructional methods
- ☐ I. Instructional settings
- ☐ J. Instructional media
- ☐ K. Primary roles of student
- ☐ L. Primary roles of teacher
- ☐ M. Instructional activities
- ☐ N. Performance evaluation

1b. **Specific instructional strategies.** More specifically, within this instructional approach, what strategies is it intended that the present curriculum program emphasize? (See Appendix B-3 for some possibilities within each approach.)

1. Objectives: Fixed sequence
2. Objectives: Flexible sequence
4. Curriculum content: Fixed sequence
5. Curriculum content: Flexible sequence
7. Instructional activities: Fixed sequence
8. Instructional activities: Flexible sequence

2. **Reasons.** Why should these instructional strategies be emphasized?

This curriculum offers a combination of both fixed and flexible sequences in objectives, content, and instructional activities. It consists of six units (models), and objectives, content, and activities are fixed within each of these. However, for five of the six modules, the student has the option of selecting the order in which to take them, and thus some flexibility is built in.

This flexibility will permit students to have greater involvement in instructional activities of the class and still, because of its fixed nature, insure that specified content will be covered in a specified order.

PLANNING A PROGRAM EVALUATION

Form 3D - Instructional Approach (Continued)

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. 5

Write the number in this box

Part 3 - Gathering and Using Evidence

4. **Sources of data.** What sources of data will provide evidence about whether these instructional strategies are actually emphasized in the present program?

a. Teacher log - Objectives, and curriculum content actually taught and activities actually conducted.
b. Student work samples - Workbooks completed, records of units/modules completed, etc.
c. Teacher conferences - Teachers discuss sequences used and reasons for using them.

5. **Judgment criteria.** How will the data collected by judged or interpreted with respect to our list of concerns and questions?

Data from teacher logs will be summerized to determine the orders in which objectives, content, and activities are actually taught. This may make it possible to detect patterns of instruction which indicate that entirely a fixed sequence of modules is being used, or that a flexible sequence is being used within a module. In discussions with teachers, attempts will be made to provide possible interpretations for different practices, and their implications for changing instruction.

PLANNING A PROGRAM EVALUATION

Form 3D - Instructional Approach

Part 1 - Clarifying Intended Instructional Approach

1a. Instructional approach. Check one and complete item 1b.

- ☐ A. Learning objectives
- ☐ B. Assessment of learning needs
- ☐ C. Diagnosis of learning needs
- ☐ D. Placement
- ☐ E. Student motivation
- ☐ F. Instructional sequence
- ☐ G. Pacing
- ☒ H. Instructional methods
- ☐ I. Instructional settings
- ☐ J. Instructional media
- ☐ K. Primary roles of student
- ☐ L. Primary roles of teacher
- ☐ M. Instructional activities
- ☐ N. Performance evaluation

1b. Specific instructional strategies. More specifically, within this instructional approach, what strategies is it intended that the present curriculum program emphasize? (See Appendix B-3 for some possibilities within each approach.)

3. Lecture (presentation by teacher)
4. Demonstration
5. Explanation
6. Question and answer
7. Discussion
11. Direct experience

2. Reasons. Why should these instructional strategies be emphasized?

Instructional methods for this program are carefully prescribed in the manuals and handbooks for this program as well as in the training sessions for teachers. This particular set of methods is intended to serve the functions of giving information to students (as in lecture, question and answer, and explanation), and involving students more directly in the teacher-learning process and reinforcing learning by practical experience (as in demonstration, discussion, and direct experience). Others are used to some extent, but these are the primary methods.

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Part 2 - Setting Priorities for Further Planning

3. Relative priority. Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. . . . . [5]

Write the number in this box

Part 3 - Gathering and Using Evidence

4. Sources of data. What sources of data will provide evidence about whether these instructional strategies are actually emphasized in the present program?

a. Teacher questionnaires - Teachers rate frequency of use of each method plus other methods used.
b. Observation of classes - Science supervisor makes random sample of classes to determine frequency of use of methods by actual observation checklist.
c. Teacher conference - Teachers discuss frequency of use and reasons for use.

5. Judgment criteria. How will the data collected by judged or interpreted with respect to our list of concerns and questions?

Teachers should, by the standards of the original program, be using these instructional methods primarily. Frequency of use and how these methods are used will be compared with an estimate of the actual frequency of use (made from the observations) and differences between these, and possible reasons for these differences will be discussed at teacher conferences.

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PLANNING A PROGRAM EVALUATION

Form 3D - Instructional Approach

Part 1 - Clarifying Intended Instructional Approach

1a. **Instructional approach.** Check one and complete item 1b.

- ☐ A. Learning objectives
- ☐ B. Assessment of learning needs
- ☐ C. Diagnosis of learning needs
- ☐ D. Placement
- ☐ E. Student motivation
- ☐ F. Instructional sequence
- ☐ G. Pacing
- ☐ H. Instructional methods
- ☒ I. Instructional settings
- ☐ J. Instructional media
- ☐ K. Primary roles of student
- ☐ L. Primary roles of teacher
- ☐ M. Instructional activities
- ☐ N. Performance evaluation

1b. **Specific instructional strategies.** More specifically, within this instructional approach, what strategies is it intended that the present curriculum program emphasize? (See Appendix B-3 for some possibilities within each approach.)

2. Teacher tutoring
4. Small group instruction
5. Large group instruction

2. **Reasons.** Why should these instructional strategies be emphasized?

These different settings are recommended for use in the program manuals for the SCI program. The combination of individualized teaching and small and large group instruction provides a flexible approach to dealing with students' learning needs in different situations.

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. . . . . [1]

Write the number in this box

Part 3 - Gathering and Using Evidence

4. **Sources of data.** What sources of data will provide evidence about whether these instructional strategies are actually emphasized in the present program?

5. **Judgment criteria.** How will the data collected by judged or interpreted with respect to our list of concerns and questions?

PLANNING A PROGRAM EVALUATION

Form 3D - Instructional Approach

Part 1 - Clarifying Intended Instructional Approach

1a. Instructional approach. Check one and complete item 1b.

- ☐ A. Learning objectives
- ☐ B. Assessment of learning needs
- ☐ C. Diagnosis of learning needs
- ☐ D. Placement
- ☐ E. Student motivation
- ☐ F. Instructional sequence
- ☐ G. Pacing
- ☐ H. Instructional methods
- ☐ I. Instructional settings
- ☒ J. Instructional media
- ☐ K. Primary roles of student
- ☐ L. Primary roles of teacher
- ☐ M. Instructional activities
- ☐ N. Performance evaluation

1b. Specific instructional strategies. More specifically, within this instructional approach, what strategies is it intended that the present curriculum program emphasize? (See Appendix B-3 for some possibilities within each approach.)

1. Printed texts, workbooks, etc.
5. Other - Laboratory equipment, supplies, manipulables, etc.

2. Reasons. Why should these instructional strategies be emphasized?

The SCI has a well-defined set of media which are intended to be used in teaching the program. Specific equipment and materials are needed for the laboratory work which the students must perform and for certain demonstrations. Each student should also have a workbook in which to record observations made in laboratory work and to do specified exercises which provide practice in using the concepts and rules in solving problems.

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Part 2 - Setting Priorities for Further Planning

3. Relative priority. Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. . . . . .

[4]
Write the number in this box

Part 3 - Gathering and Using Evidence

4. Sources of data. What sources of data will provide evidence about whether these instructional strategies are actually emphasized in the present program?

a. Materials checklist - Checklist to inventory available materials
b. Teacher questionnaire - Teachers rate availability of materials and equipment for use at appropriate times.

5. Judgment criteria. How will the data collected by judged or interpreted with respect to our list of concerns and questions?

A list of materials needed for the SCI program and the quantities needed for each item for a given number of classes and students is contained in an administrator's manual written by the program developers. Available quantities should equal or exceed those stated in the list. Further, all teachers in the program should report that all equipment and materials are available when needed.

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PLANNING A PROGRAM EVALUATION

Form 3D - Instructional Approach

Part 1 - Clarifying Intended Instructional Approach

1a. **Instructional approach.** Check one and complete item 1b.

- ☐ A. Learning objectives
- ☐ B. Assessment of learning needs
- ☐ C. Diagnosis of learning needs
- ☐ D. Placement
- ☐ E. Student motivation
- ☐ F. Instructional sequence
- ☐ G. Pacing
- ☐ H. Instructional methods
- ☐ I. Instructional settings
- ☐ J. Instructional media
- ☒ K. Primary roles of student
- ☐ L. Primary roles of teacher
- ☐ M. Instructional activities
- ☐ N. Performance evaluation

1b. **Specific instructional strategies.** More specifically, within this instructional approach, what strategies is it intended that the present curriculum program emphasize? (See Appendix B-3 for some possibilities within each approach.)

1. Accept direction
2. Assimilate information
3. Practice
4. Integrate and process information
5. Solve problems
6. Interact with others
7. Pursue individual interests
8. Cooperate in planning learning activities

2. **Reasons.** Why should these instructional strategies be emphasized?

Although other roles are also used, this set of roles represents the most important roles of the student in this program. They are roles which the student must accept or perform in achieving the objectives of this program.

PLANNING A PROGRAM EVALUATION

Form 3D - Instructional Approach (Continued)

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. . . . . .

[3]

Write the number in this box

Part 3 - Gathering and Using Evidence

4. **Sources of data.** What sources of data will provide evidence about whether these instructional strategies are actually emphasized in the present program?

5. **Judgment criteria.** How will the data collected by judged or interpreted with respect to our list of concerns and questions?

PLANNING A PROGRAM EVALUATION

Form 3D - Instructional Approach

Part 1 - Clarifying Intended Instructional Approach

1a. **Instructional approach.** Check one and complete item 1b.

- ☐ A. Learning objectives
- ☐ B. Assessment of learning needs
- ☐ C. Diagnosis of learning needs
- ☐ D. Placement
- ☐ E. Student motivation
- ☐ F. Instructional sequence
- ☐ G. Pacing
- ☐ H. Instructional methods
- ☐ I. Instructional settings
- ☐ J. Instructional media
- ☐ K. Primary roles of student
- ☒ L. Primary roles of teacher
- ☐ M. Instructional activities
- ☐ N. Performance evaluation

1b. **Specific instructional strategies.** More specifically, within this instructional approach, what strategies is it intended that the present curriculum program emphasize? (See Appendix B-3 for some possibilities within each approach.)

1. Provide direction
2. Provide information
4. Guide or facilitate discussion
5. Demonstrate
6. Motivate students
11. Assess student progress

2. **Reasons.** Why should these instructional strategies be emphasized?

Although other roles are also used, this set of roles represents the most important roles of the teacher in this program. They are roles which the teacher must perform in order to implement the program.

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. . . . . [3] Write the number in this box

Part 3 - Gathering and Using Evidence

4. **Sources of data.** What sources of data will provide evidence about whether these instructional strategies are actually emphasized in the present program?

5. **Judgment criteria.** How will the data collected by judged or interpreted with respect to our list of concerns and questions?

PLANNING A PROGRAM EVALUATION

Form 3D - Instructional Approach

Part 1 - Clarifying Intended Instructional Approach

1a. **Instructional approach.** Check one and complete Item 1b.

- ☐ A. Learning objectives
- ☐ B. Assessment of learning needs
- ☐ C. Diagnosis of learning needs
- ☐ D. Placement
- ☐ E. Student motivation
- ☐ F. Instructional sequence
- ☐ G. Pacing.
- ☐ H. Instructional methods
- ☐ I. Instructional settings
- ☐ J. Instructional media
- ☐ K. Primary roles of student
- ☐ L. Primary roles of teacher
- ☒ M. Instructional activities
- ☐ N. Performance evaluation

1b. **Specific instructional strategies.** More specifically, within this instructional approach, what strategies is it intended that the present curriculum program emphasize? (See Appendix B-3 for some possibilities within each approach.)

2. Reading
3. Listening
4. Writing
5. Responding to questions
6. Questioning
7. Working with printed texts, worksheets, exercises
9. Conferring with teacher or another student
11. Discovering through "hands on" experience
12. Researching or investigating
13. Demonstrations
17. Other - Working with lab equipment

2. **Reasons.** Why should these instructional strategies be emphasized?

These instructional activities are crucial to knowledge, practice, and reinforcement in this science program. Mastering the skills taught requires all of these activities (i.e., interactions). Others are used but these are the most important in the teaching-learning process for this course.

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. . . . . [5] Write the number in this box

Part 3 - Gathering and Using Evidence

4. **Sources of data.** What sources of data will provide evidence about whether these instructional strategies are actually emphasized in the present program?

a. Observation of classes - Science supervisor observes random sample of classes to determine extent of roles performed.
b. Teacher questionnaire - Teacher ratings of extent to which students perform such activities satisfactorily.
c. Student questionnaire - Extent to which students report they accept, prefer, and perform such activities.

5. **Judgment criteria.** How will the data collected by judged or interpreted with respect to our list of concerns and questions?

Data will be examined regarding the estimated actual (from observations) and reported (from teacher and student questionnaires) extent to which students perform such activities and how satisfactorily they perform them; and student attitudes toward such activities. All students should have minimal competencies in such roles as reported in these ratings. All students should also demonstrate positive attitudes with regard to perference and performance of these activities.

PLANNING A PROGRAM EVALUATION

Form 3E - Program Support

Part 1 - Clarifying Intended Program Support

1a. **Program support operations.** Check one and complete Item 1b.

- ☐ A. Staffing arrangements
- ☐ B. Equipment
- ☒ C. Facilities
- ☐ D. Materials management
- ☐ E. Student grouping
- ☐ F. Schedule
- ☐ G. Record keeping

1b **Program support strategies.** More specifically, within this operation, what strategies is it intended that the present curriculum program emphasize? (See Appendix B-4 for some possibilities within each operation.)

1. Functional learning space
   l. Laboratory area
   m. Other - Specific facilities such as refrigeration, gas jets, as specified in manuals for the SCI program
4. Special arrangements or environmental conditions
   a. Laboratories (science)

2. **Reasons.** Why should these program support strategies be emphasized?

This is a high school level science course with carefully specified experiments and demonstrations which are essential to learning the facts, concepts, rules, etc. Demonstration is a powerful way of teaching and science demonstrations require specialized facilities.

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Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. . . . . [1]

Write the number in this box

Part 3 - Gathering and Using Evidence

4. **Sources of data.** What sources of data will provide evidence about whether these program support strategies are actually emphasized in the present program?

5. **Judgment criteria.** How will the data collected be judged or interpreted with respect to our list of concerns and questions?

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PLANNING A PROGRAM EVALUATION

Form 3E - Program Support

Part 1 - Clarifying Intended Program Support

1a. **Program support operations.** Check one and complete Item 1b.

- ☐ A. Staffing arrangements
- ☐ B. Equipment
- ☐ C. Facilities
- ☐ D. Materials management
- ☒ E. Student grouping
- ☐ F. Schedule
- ☐ G. Record keeping

1b **Program support strategies.** More specifically, within this operation, what strategies is it intended that the present curriculum program emphasize? (See Appendix B-4 for some possibilities within each operation.)

2. Horizontal grouping
   d. Other - Ninth grade students are placed in science courses on the basis of 8th grade science grades; Standard Aptitude Test scores (combined verbal and numerical subscores); number of SCI modules completed in 8th grade; teacher recommendations; and student and parent request. Students with the highest aptitude test scores and grades go into either a biology course or an introductory physics course (which is highly mathematical). The remaining students, roughly one-third of the total, go into the SCI program.

2. **Reasons.** Why should these program support strategies be emphasized?

This grouping system is intended to provide students with greater opportunity to take science courses suited to their abilities, interests, and personal goals (since biology and physics students are usually those in going to college).

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Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. . . . . [5] Write the number in this box

Part 3 - Gathering and Using Evidence

4. **Sources of data.** What sources of data will provide evidence about whether these program support strategies are actually emphasized in the present program?

Student records will supply Standard Aptitude Test scores, grades, reading test scores, and a number of SCI modules completed. A random sample of about 200 student records will be examined (100 for current SCI students, 50 biology students, and 50 physics students) by teachers and this information copied from them. Student names will not be copied, only data.

5. **Judgment criteria.** How will the data collected be judged or interpreted with respect to our list of concerns and questions?

Aptitude test scores (verbal, numerical, and combined), reading test scores, grade point averages, and number of SCI modules completed will be tallied and averaged for each student group (i.e., SCI, biology, and physics). This data will be examined to determine the relative ability and achievement levels of the three groups.

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Instructions for Completing Forms

Before you begin. . .

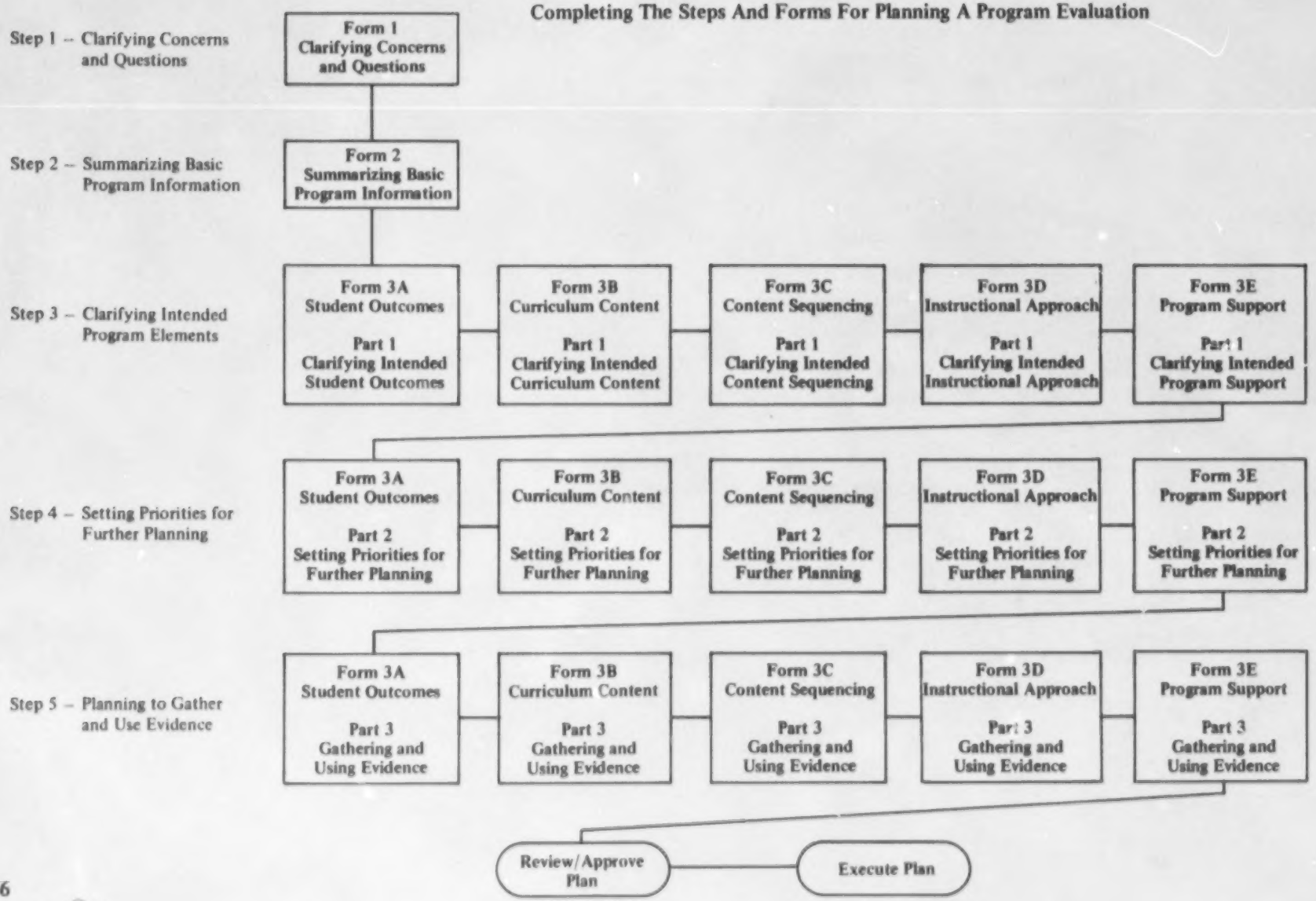
Figure 2 shows the five steps of planning the program evaluation and their relation to the forms which the planning committee will complete.

Master copies of the forms are in Appendix A. Reproduce the needed number of forms by photocopy or other duplicating methods.

The instructions for completing the forms are presented in the following order. *The forms must be completed in this order.*

1. Form 1 - Clarifying Concerns and Questions
2. Form 2 - Summarizing Basic Program Information
3. Form 3A - Student Outcomes ..... Part 1 - Clarifying Intended Student Outcomes
4. Form 3B - Curriculum Content .... Part 1 - Clarifying Intended Curriculum Content
5. From 3C - Content Sequencing .... Part 1 - Clarifying Intended Content Sequencing
6. Form 3D - Instructional Approach . Part 1 - Clarifying Intended Instructional Approach
7. Form 3E - Program Support ..... Part 1 - Clarifying Intended Program Support
8. Forms 3A through 3E ..... Part 2 - Setting Priorities for Further Planning
9. Form 3A - Student Outcomes ..... Part 3 - Gathering and Using Evidence
10. Forms 3B through 3E ..... Part 3 - Gathering and Using Evidence

FIGURE 2
Completing The Steps And Forms For Planning A Program Evaluation


Step 1 – Clarifying Concerns and Questions
Form 1 Clarifying Concerns and Questions
Step 2 – Summarizing Basic Program Information
Form 2 Summarizing Basic Program Information
Step 3 – Clarifying Intended Program Elements
Form 3A Student Outcomes Part 1 Clarifying Intended Student Outcomes
Form 3B Curriculum Content Part 1 Clarifying Intended Curriculum Content
Form 3C Content Sequencing Part 1 Clarifying Intended Content Sequencing
Form 3D Instructional Approach Part 1 Clarifying Intended Instructional Approach
Form 3E Program Support Part 1 Clarifying Intended Program Support
Step 4 – Setting Priorities for Further Planning
Form 3A Student Outcomes Part 2 Setting Priorities for Further Planning
Form 3B Curriculum Content Part 2 Setting Priorities for Further Planning
Form 3C Content Sequencing Part 2 Setting Priorities for Further Planning
Form 3D Instructional Approach Part 2 Setting Priorities for Further Planning
Form 3E Program Support Part 2 Setting Priorities for Further Planning
Step 5 – Planning to Gather and Use Evidence
Form 3A Student Outcomes Part 3 Gathering and Using Evidence
Form 3B Curriculum Content Part 3 Gathering and Using Evidence
Form 3C Content Sequencing Part 3 Gathering and Using Evidence
Form 3D Instructional Approach Part 3 Gathering and Using Evidence
Form 3E Program Support Part 3 Gathering and Using Evidence
Review/Approve Plan
Execute Plan

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INSTRUCTIONS

Form 1 - Clarifying Concerns and Questions

Before you begin. . .

Discuss the various concerns which committee members have about the curriculum program. If you have more that 4 or 5 concerns, you may have too many to deal with reasonably. Try to combine or eliminate some of them. You will need to complete one copy of Form 1 for each concern.

Item 1. Concern

Briefly summarize the nature of your concern in a short paragraph. You may find it helpful to give each concern a short title (2 or 3 words) by which to refer to it later on.

Item 2. Basis for this concern

Briefly summarize your basis for feeling that this is a concern. The basis for your concern might be some direct evidence such as test scores, survey results, or personal observation; but it could also be reports from others, complaints, or logical deductions about a situation.

Item 3. Possible questions associated with this concern.

Write a few questions related to this concern which you would like the evaluation to answer. Try to limit your list to two or three succinct questions. They should the kind of questions which can be answered by gathering data on the *actual* status of the program.

INSTRUCTIONS

Form 2 - Summarizing Basic Program Information

Before you begin. . .

Be sure that you have access to current student enrollment data for the program including, if necessary, breakdowns by sub-groups (e.g., sex, race, school, etc.).

Part 1 - Identification

Item 1. Program title.

Give the full official title of the program being evaluated.

Item 2. Content.

Briefly describe the content of the program.

Item 3. Sources and references on the program.

List all written documents which would be useful in understanding the program. This can include student texts, lists of program objectives, teachers' manuals, and other important documents.

Part 2 - Personnel

Item 4. Program Director.

Give the name of the person in charge of the program.

Item 5. Staffing.

List the names of all district personnel associated with the program. Include administrators, teachers, aides, and any other relevant personnel. Indicate the position title of each and whether they are associated with the program on a part-time or a full-time basis.

Part 3 - Students

Item 6. Locations at which program is used.

List the exact names and locations of all sites where the program is used.

Item 7. Student populations associated with program.

List the exact number of students associated with the program. Do not use an estimate. If any of the questions you wrote for Form 1 imply comparisons between student sub-groups (such as comparing boys and girls, or comparing students in the program to those not in the program), you should give the number of students in each of the sub-groups. You may also provide here a brief description of the characteristics of the student population and of the community, if you feel it is relevant to your concerns and questions.

INSTRUCTIONS

Form 3A - Student Outcomes

Part 1 - Clarifying Intended Student Outcomes

Begin you begin. . .

Review your concerns and questions and determine what kinds of student behavior you are interested in. You will need one copy of Form 3A for each type of outcome checked in Item 1a.

Item 1a. Type of outcome.

Check only one box on each copy of this form. You may check as many boxes as you want, but only one box for each copy. In effect, this provides a title or theme for the rest of the form.

Item 1b. Specifically, students should. . .

Further specify this type of outcome by completing this statement. If you have more than one outcome specification in Item 1b, you may want to put them on separate copies of this form.

Item 2. Student behaviors.

List some representative student behaviors associated with this specific type of outcome. Make this a selective list of the most important behaviors. "Behavioral objectives" are too specific. Aim for behaviors which are between general types of student outcomes and very specific student behavioral objectives. Remember that in Part 3 this form, you will have to suggest ways of collecting data about these behaviors.

INSTRUCTIONS

Form 3B - Curriculum Content

Part 1 - Clarifying Intended Curriculum Content

Before you begin. . .

Review your concerns and questions and the checklist of types and sources of content in Appendix B-1. Decide which types and sources of content are relevant to your concerns and questions. You will need one copy of Form 3B for each box checked in Item 1a.

Item 1a. Source of content.

Check only one box on each copy of this form. You may check as many boxes as you want, but only one box for each copy. This provides a title or theme for the rest of the form.

Item 1b. Types of content.

List the specific types of content within this area which the curriculum program is intended to emphasize. Use the checklist in Appendix B-1 for assistance.

Item 2. Reasons.

Briefly state your reasons for choosing these types of content. Your reasons for choosing some types of content might be related to desired student behaviors or existing student characteristics. Your reasons might also be derived from practical experience, or from assumptions about student learning. It is important that you have a consistent set of reasons to justify your intended content.

INSTRUCTIONS

Form 3C - Content Sequencing

Part 1 - Clarifying Intended Content Sequencing

Before you begin. . .

Review your concerns and questions and the checklist of content sequencing principles in Appendix B-2. Notice also that this form is directly tied to your responses on Form 3B. You will therefore need one copy of Form 3C for each type of content which you listed in Item 1b of Form 3B.

Item 1a. Type of content.

List here only one type of content from Item 1b of Form 3B.

Item 1b. Source of content sequencing principles.

Check only one box to designate the intended source of the content sequencing principles for this type of content.

Item 1c. Content sequencing principles.

List the specific content sequencing principles to be emphasized for this type of content and source of principles. Use the checklist in Appendix B-2 for assistance.

Item 2. Reasons.

Briefly state your reasons for choosing these principles. Your reasons for choosing some sequencing principles will be clearly related to the types of content you selected. Other sequencing principles will be related to desired student behaviors or student characteristics. It is important that you have a consistent set of reasons to justify your intended sequencing.

INSTRUCTIONS

Form 3D - Instructional Approach

Part 1 - Clarifying Intended Instructional Approach

Before you begin. . .

Review your concerns and questions and the checklist of instructional approaches and strategies in Appendix B-3. Decide which approaches and strategies are relevant to your concerns and questions. You will need one copy of Form 3D for each box checked in Item 1a.

Item 1a. Instructional approach.

Check only one box on each copy of this form. You may check as many boxes as you want, but only one box for each copy. This provides a title or theme for the rest of the form.

Item 1b. Specific instructional strategies.

List specific instructional strategies within this approach which the curriculum program is intended to emphasize. Use the checklist in Appendix B-3 for assistance.

Item 2. Reasons.

Briefly state your reasons for choosing these strategies. Your reasons for some strategies may be related to desired student behaviors, student characteristics, or the type of content. Your reasons may also be derived from practical experience, or from assumptions about student learning. It is important that you have a consistent set of reasons to justify your intended strategies.

INSTRUCTIONS

Form 3E - Program Support

Part 1 - Clarifying Intended Program Support

Before you begin. . .

Review your concerns and questions and the checklist of program support operations and strategies in Appendix B-4. Decide which approaches and strategies are relevant to your concerns and questions. You will need one copy of Form 3E for each box checked in Item 1a.

Item 1a. Program support operations.

Check only one box on each copy of this form. You may check as many boxes as you want, but only one box for each copy. This provides a title or theme for the rest of the form.

Item 1b. Specific program support strategies.

List specific support strategies within this operation which the program is intended to emphasize. Use the checklist in Appendix B-4 for assistance.

Item 2. Reasons.

Briefly state your reasons for choosing these strategies. Your reasons for some strategies may be related to desired student behaviors, student characteristics, type of content, or instructional approach. Your reasons may also be derived from practical experience or from assumptions about student learning. It is important that you have a consistent set of reasons to justify your intended strategies.

INSTRUCTIONS

Form 3A - Student Outcomes
Form 3B - Curriculum Content
Form 3C - Content Sequencing
Form 3D - Instructional Approach
Form 3E - Program Support

Part 2 - Setting Priorities for Further Planning

Before you begin. . .

Assemble copies of all the above forms with Part 1 completed. If it is within your budget, it would be best to have a complete set for each committee member.

Item 3. Relative priority.

If your committee is typical, you now have a large number of program elements which you want to examine. Probably you have too many to do reasonably within your budget and time constraints. If you keep too many, you may not have the resources to gather reliable and valid evaluation data on all of them. It is better to do a few concerns and elements well than to do too many badly. This part of Forms 3A through 3E is designed to help you select only those which are most important for your evaluation.

The rating scale goes from 1 for elements only a little related to the concerns and questions to 5 for elements for very highly related to them. Use only 1, 2, 3, 4, or 5 in making ratings. Do not use finer ratings such as 3 1/2 or 2.7.

You may also consider other factors in making your ratings than how related an element is to your concerns. Some elements may also have to be rated for their political value or risk. Data sources have not been mentioned yet, but you may want to consider for some elements whether it would really be practical to try to gather data about them. There may be other factors of local importance to you.

How you conduct the rating process is up to you, but two methods are commonly used. The first method was illustrated in the case study. The committee members each rate the elements according to their individual feelings. Then the members reveal and discuss their ratings. Elements which receive high ratings from all members are retained for further planning, and those which receive low ratings from all members are put aside. The committee discusses the remaining elements, which received a combination of high and low ratings, and arrives at a consensus for one rating.

In the second method, the committee members go directly to a discussion without first rating the elements individually. The committee arrives at a consensus rating for each element. Elements with high ratings are retained and those with low ratings are put aside.

It is not recommended that the committee try to average the ratings of the individual members and arrive at a consensus that way. Such a "statistical consensus" short-cuts the discussion which is so important a part of this planning process.

Do not throw away the forms for those elements which are not retained for further planning. Save them for use in future evaluation plans. Remember that doing an evaluation should not be a one-shot affair. It should be something which you will do this year, next year, and the year after that. Concerns, issues, and questions will change year after year, and even if they remain the same, the answers to them will change. Then too you may not have the resources to answer all the questions you would like to answer this year and may want to save some of them for next year.

INSTRUCTIONS

Form 3A - Student Outcomes

Part 3 - Gathering and Using Evidence

Before you begin. . .

Assemble all the forms for the elements which were retained as a result of the priority rating process. Review the information in Table 1 Possible Sources of Data for an Evaluation.

Item 4. Sources of data.

Indicate what sources of data you will use to gather evidence about this student outcome. Be as specific as possible. Give names of commercially available standardized tests if these are to be used. Give a description of any other measuring instrument. If you are going to construct the instrument, say so.

Try to choose sources of data which are appropriate for this outcome and type of student, and which will provide valid and reliable information. You may want to combine data from two or more sources. For example, standardized tests results can be combined with criterion-referenced tests.

Item 5. Measurement criterion.

Describe the minimum acceptable level of student performance in quantitative or qualitative terms. Usually measurement criteria are directly associated with or implied by your source of data (e.g., norms for a standardized test). You may include both objective and subjective criteria. Set your criteria at levels which your students can achieve and which reflect reasonable performance expectations in terms of their characteristics.

Item 6. Students expected to meet standard.

Specify the students who are expected to meet the measurement criteria. Be specific; avoid words like "the majority" or "most." Consider also whether your criteria are appropriate for all students. You may wish to express criteria differently for different sub-groups of students.

Item 7. Population characteristics.

Indicate what characteristics might be useful to know in interpreting the data. Among the factors that might influence the results are ability, motivation, social factors, personal goals, learning difficulties, and learning styles.

TABLE 1
POSSIBLE SOURCES OF DATA FOR AN EVALUATION

Sources of Data	Examples
Expert reviews	Review of curriculum materials by a university consultant
Documents	School board policy statements
Questionnaires (by mail or phone)	Community survey Student attitude survey Teacher questionnaire
Observation	Formal observation of teacher-pupil interactions in the classroom
Logs or diaries	Teacher log of content taught and activities performed
Test results	Nationally standardized ability or achievement tests Criterion-referenced tests Teacher-made tests
Group meetings	Teacher planning sessions Conference of community and school representatives
Interviews	Interview with subject area specialist Interviews with parents
Media	Newspaper articles
Personal contacts	Informal discussions with students
Follow-up studies	Survey of recent graduates
Professional publications	Research reports Professional journal articles
Existing records	Student files (achievement and aptitude test scores, grades, etc.)
Work samples	Student writing samples Student science projects

INSTRUCTIONS

Form 3B - Curriculum Content
Form 3C - Content Sequencing
Form 3D - Instructional Approach
Form 3E - Program Support

Part 3 - Gathering and Using Evidence

Before you begin. . .

Assemble all the forms for the elements which were retained as a result of the priority rating process. Review the information in Table 1 Possible Sources of Data for an Evaluation.

Item 4. Sources of data.

Indicate what sources of data you will use to gather evidence about this program element. Be as specific as possible. Specify both the kind of instrument and exactly what information it will gather. Try to choose sources of data which are appropriate for this element, for students and staff, and which will provide valid and reliable information. You may want to combine data from two or more sources.

Item 5. Judgment criterion.

Describe how you will judge or interpret the data which you collect, with respect to your original list of concerns and questions. You will want to specify how the data will be tabulated or summarized. How you summarize and analyze the data will be influenced by both the questions you want to answer and the nature of the data. Consider the implications of different possible results.

Seeking Further Assistance

Why seek assistance

All of the forms completed by the committee comprise the evaluation plan. The district now faces the task of executing that plan. If no member of the planning committee has training and experience in conducting an evaluation, then assistance will be needed from a person who does. In this section of the handbook, we will refer to any such person as a "consultant."

What makes a consultant

There are four qualities to look for in a consultant. The first, and most important, is *technical skills.* A consultant should be able to:

- Develop tests, questionnaires, checklists, and other instruments.
- Conduct statistical analyses of data collected, including the use of computers if necessary.
- Develop a management schedule for the various tasks involved in conducting the evaluation, such as dates when instruments will be developed, tests administered, or reports written.
- Handle the practical details associated with large scale test administrations and community surveys.
- Write reports of the results of the evaluation which communicate technical ideas to non-technical audiences.

A second important quality of a consultant is *interpersonal skills.* The consultant must be able to understand the concerns of the district and work with district staff. He must be a "team player." Conducting an evaluation is often filled with tensions and pressures which make it important that everyone concerned work together. Remember that the district properly controls both the planning and the execution of the evaluation. The consultant is expected to exercise technical leadership, but should not be expected to completely control the evaluation effort.

A third quality is that of having *conceptual skills.* A good consultant must be able to interrelate and integrate all pieces of the evaluation plan into a working whole. He must also be able to see beyond the immediate concerns and questions that led to the evaluation planning and identify other issues that might be crucial for consideration. A good consultant often suggests changes that make a plan more effective. Be open minded to recommendations by the consultant. On the other hand, do not allow a consultant to transform the committee's evaluation plan to one that fits his favorite framework.

A fourth quality to look for is *experience.* It is proper and advisable to ask a potential consultant for evidence of his previous evaluation experience, and for references who can be contacted to obtain assessments of his work.

Where to find a consultant

A consultant may be available within the school district. Some districts have full-time evaluators who evaluate local programs and administer testing programs. If not, there are other places to look.

Many states now have regional service agencies which provide evaluation assistance as part of their services. These agencies are known by different names in different states: Pennsylvania calls them Intermediate Units, New Jersey calls them Educational Improvement Centers, Texas calls them Regional Educational Service Centers, and so on. If there are such agencies in your state, they may be able to provide evaluation assistance or recommend someone who could.

Local colleges or universities are also sources of assistance. Look especially for someone with a background in educational evaluation. Faculty members often do consulting and, in schools with a large graduate program, advanced graduate students may also be available.

Regional research and development laboratories may be another source of assistance. There are a number of such agencies around the country. Research for Better Schools is one of them.

There are also many private agencies and individuals who specialize in assisting school district personnel in doing evaluations. They sometimes advertise or send promotional literature to you or your superintendent.

More about costs

Bear in mind that just as there were costs associated with planning the evaluation, there will be costs associated with executing the evaluation plan.

Evaluations tend to be very labor intensive, and thus a major cost is professional time, especially that for the consultant. Most consultants charge by the day. Others will give a package price for their services for the complete evaluation. Sometimes the package price will include services such as computer processing. However, consultants from regional service agencies usually do not make such charges; services to local districts are part of their responsibilities.

Just as the costs of involving teachers in the evaluation planning had to be considered, so will the costs for conducting the evaluation. Class time may have to be taken for administering instruments to students. If teachers must answer questionnaires or be interviewed, time must be allowed for these activities.

Materials and instrument costs are involved in the purchase of commercially made tests. If instruments are locally constructed, costs must be allowed for paper and printing, and for time to write and test these instruments.

Data processing may be another major expense. Computer analysis of data can include costs for keypunching cards, programming services, and computer time. Cards may be keypunched using the district's services; if so, the correct punched card format should first be confirmed with your consultant. Do not count on processing data through the district's computer services. Such services are usually designed for administrative programs such as budgeting, attendance, and grade reports and not for statistical analysis.

With or without the computer, costs must be estimated for persons to code and tabulate the data from the original instruments, or to purchase commercial test scoring services for standardized tests.

Reporting findings and conclusions involves costs that include time to write the report, to have it reviewed, and to type and print the final copy.

Appendix A
Master Copies of Forms

This appendix contains full-size copies of all the forms which the evaluation planning committee must complete. To use these forms, simply tear them out, trim off the ragged edge, and reproduce them by any photocopy or offset printing method. Be sure to have sufficient copies printed for all the committee members to use in the planning process.

PLANNING A PROGRAM EVALUATION

Form 1 - Clarifying Concerns and Questions

1. **Concern.**

2. **Basis for this concern.**

3. **Possible questions associated with this concern.**

PLANNING A PROGRAM EVALUATION

Form 2 - Summarizing Basic Program Information

Part 1 - Identification

1. **Program title.**

2. **Content.**

3. **Sources and references on the program.**

Part 2 - Personnel

4. **Program Director.**

5. **Staffing.**

Part 3 - Students

6. **Locations at which program is used.**

7. **Student population associated with program.**

PLANNING A PROGRAM EVALUATION

Form 3A - Student Outcomes

Part 1 - Clarifying Intended Student Outcomes

1a. **Type of outcome**. Check one and complete Item 1b.

- ☐ A. Information recall
- ☐ B. Basic skills
- ☐ C. Higher order processes
- ☐ D. Support skills
- ☐ E. Attitudes
- ☐ F. Values
- ☐ G. Personal development
- ☐ H. Social development

1b. **Specifically, students should...**

2. **Student behaviors**. What are some representative behaviors for this type of outcome?

Part 2 - Setting Priorities for Further Planning

3. **Relative priority**. Compared with other types of outcomes and student behaviors that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related . . . . . ☐ Write the number in this box

Part 3 - Gathering and Using Evidence

4. **Source of data.** What source of data will provide evidence about this outcome?

5. **Measurement criterion.** What is the minimum acceptable performance for an individual student?

6. **Students expected to meet standard.** How many students in our population are expected to meet this standard?

7. **Population characteristics.** What characteristics of this population are useful to know in interpreting their performance?

Part 1 - Clarifying Intended Curriculum Content

1a. **Source of content.** Check one and complete Item 1b.

- ☐ A. Traditional academic disciplines
- ☐ B. Personal experiences of students
- ☐ C. Society as an environment
- ☐ D. The world of thought

1b. **Types of content.** More specifically, within this subject matter area, what types of content is it intended that the present curriculum program emphasize? (See Appendix B-1 for some possibilities within each area.)

2. **Reasons.** Why should these types of content be emphasized?

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. . . . . Write the number in this box

Part 3 - Gathering and Using Evidence

4. **Sources of data.** What sources of data will provide evidence about whether these types of content are actually emphasized in the present program?

5. **Judgment criteria.** How will the data collected be judged or interpreted with respect to our list of concerns and questions?

PLANNING A PROGRAM EVALUATION

Form 3C - Content Sequencing

Part 1 - Clarifying Intended Content Sequencing

1a. **Type of content** (from Item 1b on Form 3B).

1b. **Source of content sequencing principles.** The intended source for this type of content. Check one and complete Item 1c.

- ☐ A. Experience or observation of the world
- ☐ B. Logical structure of existing knowledge
- ☐ C. Methods of intellectual inquiry
- ☐ D. Assumptions about the psychology of learning
- ☐ E. Conditions under which knowledge could be used.

1c. **Content sequencing principles.** More specifically, for this type of content and for this source, what sequencing principles is it intended that the present curriculum program emphasize? (See Appendix B-2 for some possibilities within each source.)

2. **Reasons.** Why should these principles be emphasized?

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. . . . . ☐

Write the number in this box

Part 3 - Gathering and Using Evidence

4. **Sources of data.** What sources of data will provide evidence about whether these content sequencing principles are actually emphasized in the present program?

5. **Judgment criteria.** How will the data collected be judged or interpreted with respect to our list of concerns and questions?

PLANNING A PROGRAM EVALUATION

Form 3D - Instructional Approach

Part 1 - Clarifying Intended Instructional Approach

1a. **Instructional approach.** Check one and complete Item 1b.

- ☐ A. Learning objectives
- ☐ B. Assessment of learning needs
- ☐ C. Diagnosis of learning needs
- ☐ D. Placement
- ☐ E. Student motivation
- ☐ F. Instructional sequence
- ☐ G. Pacing.
- ☐ H. Instructional methods
- ☐ I. Instructional settings
- ☐ J. Instructional media
- ☐ K. Primary roles of student
- ☐ L. Primary roles of teacher
- ☐ M. Instructional activities
- ☐ N. Performance evaluation

1b. **Specific instructional strategies.** More specifically, within this instructional approach, what strategies is it intended that the present curriculum program emphasize? (See Appendix B-3 for some possibilities within each approach.)

2. **Reasons.** Why should these instructional strategies be emphasized?

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. . . . . .

☐
Write the number in this box

Part 3 - Gathering and Using Evidence

4. **Sources of data.** What sources of data will provide evidence about whether these instructional strategies are actually emphasized in the present program?

5. **Judgment criteria.** How will the data collected by judged or interpreted with respect to our list of concerns and questions?

PLANNING A PROGRAM EVALUATION

Form 3E - Program Support

Part 1 - Clarifying Intended Program Support

1a. **Program support operations.** Check one and complete Item 1b.

- ☐ A. Staffing arrangements
- ☐ B. Equipment
- ☐ C. Facilities
- ☐ D. Materials management
- ☐ E. Student grouping
- ☐ F. Schedule
- ☐ G. Record keeping

1b. **Program support strategies.** More specifically, within this operation, what strategies is it intended that the present curriculum program emphasize? (See Appendix B-4 for some possibilities within each operation.)

2. **Reasons.** Why should these program support strategies be emphasized?

Part 2 - Setting Priorities for Further Planning

3. **Relative priority.** Compared with other elements that might be examined, how highly related is this to our concerns and questions?

Use a rating scale of 1 to 5 with
5 = very highly related and
1 = only a little related. . . . . ☐

Write the number in this box

Part 3 - Gathering and Using Evidence

4. **Sources of data.** What sources of data will provide evidence about whether these program support strategies are actually emphasized in the present program?

5. **Judgment criteria.** How will the data collected be judged or interpreted with respect to our list of concerns and questions?

Appendix B
Program Element Checklists

A word about these checklists

The Program Element Checklists in this appendix have been excerpted from *Curriculum and Instruction: Planning Improvement*, a training package developed by Sharon Tumulty (Research for Better Schools, 1978). *Curriculum and Instruction* helps you determine the specific kinds of program improvements to be made in curriculum or instruction or both. It includes a planning process which stresses the curriculum program elements of student outcomes, curriculum content, content sequencing, instructional approach, and support systems (called program support in this handbook). *Planning A Program Evaluation: An Educator's Handbook* has been designed to be compatible with the improvement approach emphasized in *Curriculum and Instruction.* You can begin your program evaluation with this handbook and be assured that your evaluation plan and results will be helpful in developing plans for program improvement using *Curriculum and Instruction.*

APPENDIX B-1

CURRICULUM CONTENT - SOURCE AND TYPES

Use this checklist for help in completing Items 1a and 1b on Form 3B.

☐ A. **Academic disciplines.** Organized bodies of existing knowledge.

- ☐ 1. Terms
- ☐ 2. Facts
- ☐ 3. Key concepts
- ☐ 4. Rules and relationships
- ☐ 5. Methods and procedures
- ☐ 6. Principles and generalizations
- ☐ 7. Other (specify)

☐ B. **Personal experiences.** Experiences which are part of the student's daily life.

- ☐ 1. Student interests or purposes
- ☐ 2. Student activities
- ☐ 3. Student choices and actions
- ☐ 4. Personal roles and relationships
- ☐ 5. Other (specify)

☐ C. **Society.** The broad environment of human relationships, activities, and institutions.

- ☐ 1. Life roles in society
- ☐ 2. Practical life skills
- ☐ 3. Current events and issues
- ☐ 4. Social problems
- ☐ 5. Social values
- ☐ 6. Societal functions
- ☐ 7. Other (specify)

☐ D. **World of thought.** Thinking strategies used to develop, discover, clarify, test, or apply knowledge.

- ☐ 1. Inductive reasoning processes
- ☐ 2. Deductive reasoning processes
- ☐ 3. Other (specify)

APPENDIX B-2

CONTENT SEQUENCING - SOURCES AND PRINCIPLES

Use this checklist for help in completing Items 1b and 1c on Form 3C.

☐ A. **Experience or observation of the world.** Content is sequenced in terms of the way reality is organized.

- ☐ 1. Chronological order
- ☐ 2. Spatial relationships
- ☐ 3. Physical characteristics
- ☐ 4. Other (specify)

☐ B. **Logical structure of existing knowledge.** Content is sequenced in terms of the logical ways in which existing knowledge has been or can be organized.

- ☐ 1. Generalization to specific example.
- ☐ 2. Specific example to generalization
- ☐ 3. Simple to complex
- ☐ 4. Concrete to abstract
- ☐ 5. Less refined to more refined (spiral)
- ☐ 6. Rule/theory/principle to application of rule/theory/principle
- ☐ 7. Pre-requisite order of concepts
- ☐ 8. Other (specify)

☐ C. **Methods of intellectual inquiry.** Content is sequenced in terms of the step-by-step thinking procedures associated with specific thinking strategies.

- ☐ 1. Instances of generalization to discovery of generalization
- ☐ 2. Hypothesis to testing of hypothesis
- ☐ 3. Generalization to application of generalization in specific instances
- ☐ 4. Other (specify)

☐ D. **Assumptions about the Psychology of learning.** Content is sequenced in terms of experience or theory-based rules or assumptions about which content must necessarily precede the learning of other content, which content is more likely to facilitate learning, which content is most compatible with the learner's level of psychological readiness to learn.

- ☐ 1. Pre-requisite order of skills
- ☐ 2. More familiar to less familiar
- ☐ 3. Less difficult to more difficult
- ☐ 4. More interesting to less interesting
- ☐ 5. Progressive stages of human development
- ☐ 6. Awareness/interest to internalized attitude/value
- ☐ 7. Other (specify)

☐ E. **Conditions under which knowledge could be used.** Content is sequenced in terms of degree of relevance to user needs, in terms of step-by-step procedures for performing a job or task or for solving problems, or in terms of potential frequencing of use.

- ☐ 1. High relevance to lesser relevance (personal, social or career)
- ☐ 2. Pre-requisites for job/task performance
- ☐ 3. Step-by-step problem-solving procedures
- ☐ 4. Higher frequency of use to lesser frequency of use
- ☐ 5. Other (specify)

APPENDIX B-3
INSTRUCTIONAL APPROACHES AND STRATEGIES

Use this checklist for help in completing Items 1a and 1b on Form 3D.

☐ A. **Learning objectives.** Specifying desired student performance in behavioral terms.

- ☐ 1. Specified in advance
- ☐ 2. Related to instructional materials
- ☐ 3. Modified during instruction
- ☐ 4. Developed during instruction
- ☐ 5. Unspecified
- ☐ 6. Other (specify)

☐ B. **Assessment of learning needs.** Identifying student performance goals and/or problems

- ☐ 1. Based on comparison with group norm
- ☐ 2. Based on mastery of specific instructional objectives
- ☐ 3. Based on other objective criteria
- ☐ 4. Based on subjective criteria
- ☐ 5. Other (specify)

☐ C. **Diagnosis of learning needs.** Analyzing particular student behaviors to be improved and/or student learning characteristics.

- ☐ 1. Learning prerequisites
- ☐ 2. Objectives already mastered by student
- ☐ 3. Student error patterns
- ☐ 4. Probable causes of learning difficulties
- ☐ 5. Physical, emotional, psychological, cognitive, social development of student.
- ☐ 6. Student learning preferences or interests

- ☐ 7. Student learning styles
- ☐ 8. Other (specify)

☐ D. **Placement.** Deciding where to begin student instruction.

- ☐ 1. Individual student performance on standardized test
- ☐ 2. Individual student performance on criterion-referenced test
- ☐ 3. Individual student placement decisions made by previous teacher
- ☐ 4. Other (specify)

☐ E. **Student movtiation.** Encouraging student learning.

- ☐ 1. Based on student's need to achieve or succeed
- ☐ 2. Based on student's curiosity or desire to explore
- ☐ 3. Based on student's interests
- ☐ 4. Based on immediate and specific feedback on student's performance
- ☐ 5. Based on general praise or approval
- ☐ 6. Based on material rewards
- ☐ 7. Based on acceptance by peer group, parents, or teachers
- ☐ 8. Based on increased student freedom of choice
- ☐ 9. Other (specify)

☐ F. **Instructional sequence.** Organizing and/or varying the order of student instruction.

- ☐ 1. Objectives: Fixed sequence
- ☐ 2. Objectives: Flexible sequence
- ☐ 3. Objectives: Alternate sequences
- ☐ 4. Curriculum content: Fixed sequence
- ☐ 5. Curriculum content: Flexible sequence
- ☐ 6. Curriculum content: Alternate sequences
- ☐ 7. Instructional activities: Fixed sequence

- ☐ 8. Instructional activities: Flexible sequence
- ☐ 9. Instructional activities: Alternate sequences
- ☐ 10. Other (specify)

☐ G. **Pacing.** Determining the rate of student progress through the instructional sequence.

- ☐ 1. Group paced
- ☐ 2. Individually paced
- ☐ 3. Student self-paced
- ☐ 4. Other (specify)

☐ H. **Instructional methods.** Engaging students in the learning process.

- ☐ 1. Drill and practice
- ☐ 2. Programmed instruction
- ☐ 3. Lecture (presentation by teacher)
- ☐ 4. Demonstration
- ☐ 5. Explanation
- ☐ 6. Question and answer
- ☐ 7. Discussion
- ☐ 8. Group problem solving
- ☐ 9. Guided discovery
- ☐ 10. Inquiry
- ☐ 11. Direct experience
- ☐ 12. Simulation, role play
- ☐ 13. Computer, programmed learning machine
- ☐ 14. Other (specify)

☐ I. **Instructional settings.** Establishing appropriate student learning situations.

- ☐ 1. Self-instructional study (study by oneself)
- ☐ 2. Teacher tutoring

- ☐ 3. Peer (student) tutoring
- ☐ 4. Small group instruction
- ☐ 5. Large group instruction
- ☐ 6. Seminar
- ☐ 7. Independent study (self-directed study independent of regularly structured curriculum)
- ☐ 8. Other (specify)

☐ J. **Instructional media.** Presenting instructional content in print, audio-visual, or manipulative form.

- ☐ 1. Printed texts, workbooks, learning activity packs, etc.
- ☐ 2. Visual: slides, films, film loops, filmstrips, television, video-tapes, exhibits or displays, posters and charts, overhead transparencies
- ☐ 3. Audio: tape cassettes, tape recordings, radio, records
- ☐ 4. Manipulative: objects, models, kits
- ☐ 5. Other (specify)

☐ K. **Primary roles of student.** Specifying how the student should function in the learning environment.

- ☐ 1. Accept direction
- ☐ 2. Assimilate information
- ☐ 3. Practice
- ☐ 4. Integrate and process information
- ☐ 5. Solve problems
- ☐ 6. Interact with others
- ☐ 7. Pursue individual interests
- ☐ 8. Cooperate in planning learning activities
- ☐ 9. Manage learning activities
- ☐ 10. Assess learning progress
- ☐ 11. Select learning materials
- ☐ 12. Other (specify)

☐ L. **Primary roles of teacher.** Specifying how the teacher should function in the learning environment.

- ☐ 1. Provide direction
- ☐ 2. Provide information
- ☐ 3. Analyze or interpret information
- ☐ 4. Guide or facilitate discussion
- ☐ 5. Demonstrate
- ☐ 6. Motivate students
- ☐ 7. Diagnose student learning needs
- ☐ 8. Select/adapt instructional methods, learning settings, and media
- ☐ 9. Prescribe learning activities
- ☐ 10. Tutor individual students
- ☐ 11. Assess student progress
- ☐ 12. Provide enrichment
- ☐ 13. Other (Specify)

☐ M. **Instructional activities.** Specifying how the student should interact with the teacher, other students, and/or media.

- ☐ 1. Reciting
- ☐ 2. Reading
- ☐ 3. Listening
- ☐ 4. Writing
- ☐ 5. Responding to questions
- ☐ 6. Questioning
- ☐ 7. Working with printed texts, worksheets, exercises
- ☐ 8. Working with multi-media learning materials
- ☐ 9. Conferring with teacher or another student
- ☐ 10. Participating in group discussion
- ☐ 11. Discovering through "hands on" experience
- ☐ 12. Researching or investigating

- ☐ 13. Demonstration
- ☐ 14. Planning and conducting projects
- ☐ 15. Participating in games
- ☐ 16. Participating in field trips
- ☐ 17. Other (specify)

☐ N. **Performance evaluation.** Gathering information about student progress and student needs.

- ☐ 1. Frequent evaluation
- ☐ 2. Infrequent evaluation
- ☐ 3. Broad content mastery evaluated
- ☐ 4. Mastery of small units of content evaluated
- ☐ 5. Mastery of individual objectives evaluated
- ☐ 6. Affective development evaluated
- ☐ 7. Other (specify)

APPENDIX B-4
PROGRAM SUPPORT - OPERATIONS AND STRATEGIES

Use this checklist for help in completing Items 1a and 1b on Form 3E.

☐ A. **Staffing arrangements.** Organizing staff to make optimal use of their knowledge and skills.

- ☐ 1. Subject matter assignments
  - ☐ a. Self-contained classroom. One teacher for all subjects.
  - ☐ b. Departmentalized. Different teacher for each subject.
  - ☐ c. Semi-departmentalized. Different teacher for each subject except for several subjects which are combined in a core curriculum.
  - ☐ d. Other (specify)
- ☐ 2. Planning of instruction
  - ☐ a. Plans on individual basis
  - ☐ b. Several teachers engage in cooperative planning. Independent in terms of actual instruction.
  - ☐ c. Team of teachers engage in cooperative planning. Still independent in terms of actual instruction.
  - ☐ d. Other (specify)
- ☐ 3. Responsibility for instruction
  - ☐ a. Individual teacher instructs students.
  - ☐ b. Several teachers exchange some students for instruction.
  - ☐ c. Several teachers conduct joint instruction.
  - ☐ d. Team of teachers share instructional tasks. Staff functions based on differences in preparation, interests, etc.
  - ☐ e. Other (specify)

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- ☐ 4. Instructional roles
  - ☐ a. Team leader with some administrative responsibilities. Master teacher, unit leader, etc.
  - ☐ b. Specialist teacher
  - ☐ c. Regular staff teacher
  - ☐ d. Student intern. Student teacher
  - ☐ e. Instructional aide. Paraprofessional, paid or volunteer.
  - ☐ f. Other (specify)
- ☐ 5. Support roles
  - ☐ a. Educational specialist. Subject matter expert, curriculum coordinator, evaluator counselor, etc.
  - ☐ b. Media specialist. Media design specialist, audiovisual technician, etc.
  - ☐ c. Consultant. Materials management, inventory and ordering, etc.
  - ☐ d. Aide.
  - ☐ e. Clerk typist.
  - ☐ f. Other (specify)

☐ B. **Equipment.** Arranging equipment to provide flexible support for instruc-instruction.

- ☐ 1. Mobility of equipment
  - ☐ a. Portable media equipment. Filmstrip, film or overhead projectors, record or tape players, etc.
  - ☐ b. Fixed or stationary media equipment. Large screen projectors, central audio source, etc.
  - ☐ c. Fixed furnishings.
  - ☐ d. Movable furnishings.
  - ☐ e. Fixed storage or supply cabinets.
  - ☐ f. Movable storage or supply cabinets, carts, etc.
  - ☐ g. Other (Specify)

- ☐ 2. Special arrangements and conditions
  - ☐ a. Special fixtures/outlets, etc.
  - ☐ b. Limited compatibility of equipment. Size of videotape accepted by different recorders, etc.
  - ☐ c. Full compatibility of equipment.
  - ☐ d. Other (specify)

☐ C. **Facilities**. Providing diversified learning space to accommodate various instructional purposes and learning styles.

- ☐ 1. Functional learning space
  - ☐ a. Media area for use by individual students. Viewing, listening carrels, etc.
  - ☐ b. Media area for use by groups of students. Film theater, etc.
  - ☐ c. Quiet area for independent study.
  - ☐ d. Quiet area for reading.
  - ☐ e. Group meeting or discussion area.
  - ☐ f. Selected area for tutoring or individual conferences.
  - ☐ g. General learning space for lecture, large group demonstration, discussion.
  - ☐ h. High physical activity area.
  - ☐ i. Laboratory area.
  - ☐ j. Accessible area for scoring/correction of student tests, etc.
  - ☐ k. Community sites.
  - ☐ l. Industrial sites.
  - ☐ m. Other (specify)
- ☐ 2. Flexibility of learning space
  - ☐ a. Traditional classroom (fixed room arrangement).
  - ☐ b. Traditional classroom (flexible room arragement).

- ☐ c. Multi-purpose room. General learning space with portable dividers.
- ☐ d. Learning resource center.
- ☐ e. Special purpose center. Writing center, etc.
- ☐ f. Open space area.
- ☐ g. Other (Specify)

☐ 3. Accessibility of learning space

- ☐ a. Near to learning resource center or library.
- ☐ b. Near to materials and/or equipment storage areas.
- ☐ c. Near to other functional learning areas
- ☐ d. Other (specify)

☐ 4. Special arrangements or environmental conditions

- ☐ a. Laboratories (Science).
- ☐ b. Learning laboratories.
- ☐ c. Special teacher/aide stations.
- ☐ d. Special lighting, acoustics, furniture, etc.
- ☐ e. Other (specify)

☐ D. **Materials management**. Insuring that learning materials are available and accessible when needed by teachers and by students.

☐ 1. Accessibility of materials

- ☐ a. Central storage of materials.
- ☐ b. Decentralized storage of materials.
- ☐ c. Portable storage of materials.
- ☐ d. Materials accessible to teachers onlh.
- ☐ e. Materials accessible to teachers and aides.
- ☐ f. Materials accessible to teachers, aides, and students.
- ☐ g. Other (specify)

- ☐ 2. Ordering and replacement of materials
  - ☐ a. Frequent inventory and replacement of materials by teacher or aide.
  - ☐ b. Infrequent inventory and replacement of materials.
  - ☐ c. Other (specify)
- ☐ 3. Variety of materials
  - ☐ a. Variety of alternative materials in case of high demand and limited supply.
  - ☐ b. Limited variety of alternative materials.
  - ☐ c. Other (specify)

☐ E. **Student grouping**. Organizing students to facilitate their progress through the curriculum and to provide individual students with maximum opportunities for academic, personal, and social development

- ☐ 1. Vertical grouping
  - ☐ a. Traditional age-graded system
  - ☐ b. Multi-age or multi-graded system
  - ☐ c. Nongraded system. Continuous progress.
  - ☐ d. Other (specify)
- ☐ 2. Horizontal grouping: Inter-class
  - ☐ a. Homogeneous. Based on likeness in terms of age, interests, ability, achievement or performance, learning style, learning difficulties, etc.
  - ☐ b. Heterogeneous. Social integration of student population, activities, projects, etc.
  - ☐ c. Individual alone
  - ☐ d. Other (specify)
- ☐ 3. Horizontal grouping: Intra-class
  - ☐ a. Homogeneous
  - ☐ b. Heterogeneous

- ☐ c. Individual alone
- ☐ d. Other (specify)

☐ 4. Frequency of Regrouping

- ☐ a. Frequent regrouping
- ☐ b. Occasional regrouping
- ☐ c. Little or no regrouping
- ☐ d. Other (specify)

☐ 5. Basis for regrouping

- ☐ a. General observation of overall needs of students as a group.
- ☐ b. Regular review of individual student's performance in terms of group norms.
- ☐ c. Individual student's mastery of specific objectives.
- ☐ d. Diagnosis of individual student's learning difficulties.
- ☐ e. Differences in individual learning style, motivation, etc.
- ☐ f. Student interests and performances.
- ☐ g. Student review and diagnosis of own performance.
- ☐ h. Other (specify)

☐ F. **Schedule-tailoring time to instructional requirements.**

☐ 1. Flexibility of schedule

- ☐ a. Fixed. Regularly scheduled class periods.
- ☐ b. Variable or modular. Flexibility scheduled blocks of time.
- ☐ c. Mixed. Some regularly scheduled, some flexibly scheduled.
- ☐ d. Open. Unscheduled.
- ☐ e. Other (specify)